# TONE GENERATOR
# MU10
# SERVICE MANUAL

# YAMAHA CORP.

## IMPORTANT NOTICE

This manual has been provided for the use of authorized Yamaha Retailers and their service personnel. It has been assumed that basic service procedures inherent to the industry, and more specifically Yamaha Products, are already known and understood by the users, and have therefore not been restated.

**WARNING:** Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components and failure of the product to perform as specified. For these reasons, we advise all Yamaha product owners that all service required should be performed by an authorized Yamaha Retailer or the appointed service representative.

**IMPORTANT:** This presentation or sale of this manual to any individual or firm does not constitute authorization, certification, recognition of any applicable technical capabilities, or establish a principal-agent relationship of any form.

The data provided is belived to be accurate and applicable to the unit(s) indicated on the cover. The research engineering, and service departments of Yamaha are continually striving to improve Yamaha products. Modifications are, therefore, inevitable and changes in specification are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

**WARNING:** Static discharges can destroy expensive components. Discharge any static electricity you body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss.)

**IMPORTANT:** Turn the unit OFF during disassembly and parts replacement. Recheck all work before you apply power to the unit.

## WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHAT SO EVER!

Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.
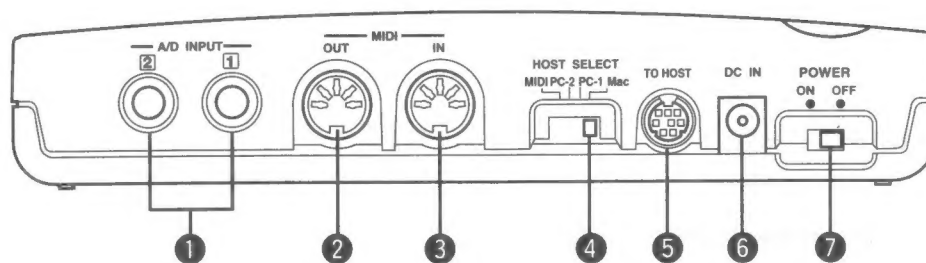
# ■ SPECIFICATIONS

| | |
|---|---|
| **Tone Generation Method** | AWM2 (Advanced Wave Memory 2) |
| **Maximum Simultaneous Polyphony** | 32-note (last note priority; 30-note polyphony when A/D INPUT is used) |
| **Performance Mode** | XG mode, TG300B mode |
| **Multi-timbral Capacity** | 16-Part (on 16 MIDI channels; with Element Reserve priority for later and Dynamic Voice Allocation) |

**Voices**

    **Normal Voices**

        Total.........................................676

        XG mode..................................480

        TG300B mode..........................579

    **Drum Voices (percussion sets)**

        Total.........................................21

        XG mode..................................11

        TG300B mode..........................10

    **A/D Input**

        Input jacks................................2

        A/D resolution .........................16 bit

        Channel....................................1

        Input gain ................................Mic/Line(changed upon reception of appropriate MIDI System Exclusive messages)

        Input volume controls ..............2 independent A/D INPUT VOLUME sliders)

| | |
|---|---|
| **Effects** | Reverb(11 types), Chorus(11 types), Variation(43 types); can be applied to A/D Input sources |
| **Jacks and Terminals** | LINE OUT/PHONES jack, DC IN jack, TO HOST terminal, MIDI OUT/IN terminals, A/D INPUT 1, 2 jacks |
| **Controls and Indicators** | POWER LED, A/D INPUT VOLUME sliders, VOLUME slider, HOST SELECT switch, POWER ON/OFF switch |
| **Power Supply** | Yamaha PA-3B, PA-1207, or equivalent AC Adapter (The recommended power adapter may vary, depending on your location. Please consult your nearest Yamaha dealer for deals.) Six 1.5V AA size (SUM-3,R-6, or equivalent) batteries |
| **Dimensions(W×D×H)** | 188×104×35mm (7-3/8"×4-1/8"×1-3/8") |
| **Weight** | 300g (11 oz; without batteries) |
| **Included Accessories** | Owner's Manual |
| **Output Level** | See the Test Program described on page 17 of this service manual. |

# ■ 総合仕様

| | |
|---|---|
| 音源方式 | AWM2 (Advanced Wave Memory 2) |
| 最大同時発音数 | 32 音（後着優先） |
| 演奏モード | XG, TG300B |
| 発音方式 | 16 チャンネル・マルチティンバー<br>エレメントリザーブ付後着優先、DVA |

**音色数**

| | | | |
|---|---|---|---|
| ノーマルボイス | トータル | .......................... | 676 |
| | XG | .......................... | 480 |
| | TG300B | .......................... | 579 |
| ドラムボイス（セット） | トータル | .......................... | 21 |
| | XG | .......................... | 11 |
| | TG300B | .......................... | 10 |

| | |
|---|---|
| A/D インプット | 入力端子数 ..................... 2 端子<br>A/D 精度 ......................... 16 ビット<br>チャンネル数 ................. 1 チャンネル<br>入力ソース ..................... マイク（ギター）／ライン（MIDI メッセージで<br>切り替え）<br>入力レベル ..................... 本体の A/D INPUT VOLUME にて調整（2 端子独<br>立で設定可） |
| エフェクト | リバーブ×11、コーラス×11、バリエーション×43<br>＊A/D インプットに対しても有効 |
| 接続端子 | DC IN, TO HOST, MIDI IN, MIDI OUT, A/D INPUT(1,2),<br>LINE OUT/PHONES |
| 操作子 | POWER(LED 付), HOST SELECT(Mac/PC-1/PC-2/MIDI)<br>A/D INPUT VOLUME(1,2), VOLUME |
| 外形寸法 | 188(W)×104(D)×35(H)mm |
| 重量 | 300g（乾電池を含まず） |
| 付属品 | 取扱説明書 |
| 出力レベル | P.19 のテストプログラムをご参照下さい。 |

## ■ PANEL LAYOUT (パネルレイアウト)

● **Rear Panel** (リアパネル)



| | |
|---|---|
| ❶ A/D INPUT 1,2 terminals | ❶ A/D インプット端子 |
| ❷ MIDI OUT terminal | ❷ MIDI OUT 端子 |
| ❸ MIDI IN terminal | ❸ MIDI IN 端子 |
| ❹ HOST SELECT switch | ❹ HOST SELECT（ホストセレクト）スイッチ |
| ❺ TO HOST terminal | ❺ TO HOST（トゥーホスト）端子 |
| ❻ DC IN jack | ❻ DC IN（AC アダプター）端子 |
| ❼ POWER switch | ❼ POWER（パワー）スイッチ |

● **Top Panel** (トップパネル)　　　　● **Side Panel** (サイドパネル)
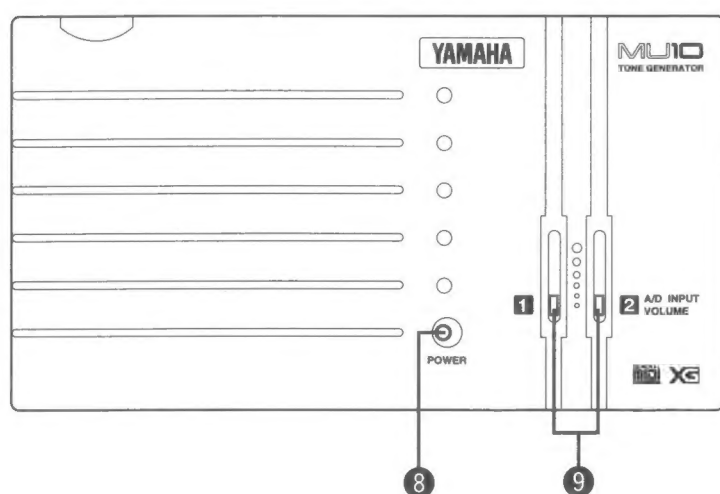


| | |
|---|---|
| ❽ POWER lamp | ❽ POWER（パワー）ランプ |
| ❾ A/D INPUT VOLUME 1,2 terminals | ❾ A/D インプットボリューム端子 |
| ❿ LINE OUT/PHONES jack | ❿ LINE OUT/PHONES（ラインアウト/ヘッドフォン）端子 |
| ⓫ VOLUME control | ⓫ VOLUME（ボリューム）コントロール |
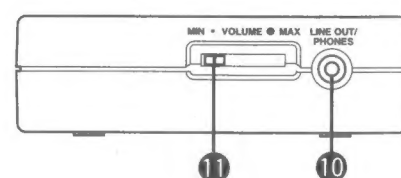
# ■ CIRCUIT BOARD LAYOUT (ユニットレイアウト)

Shield sheet（シールドシート）

Top cover（トップカバー）

Bottom cover（ボトムカバー）

DM

Shield sheet（シールドシート）

PN

DM
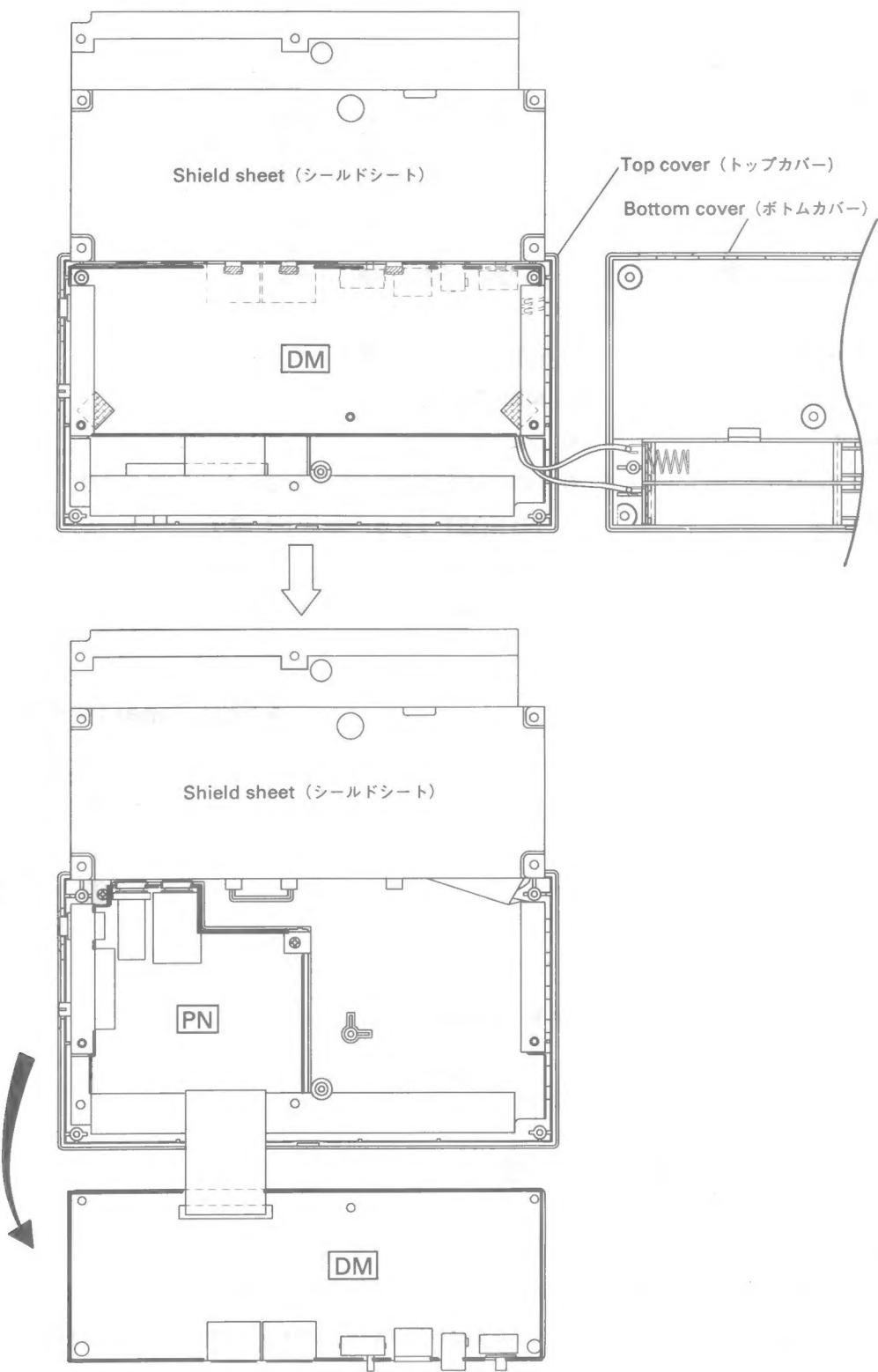
# ■ BLOCK DIAGRAM (ブロックダイアグラム)
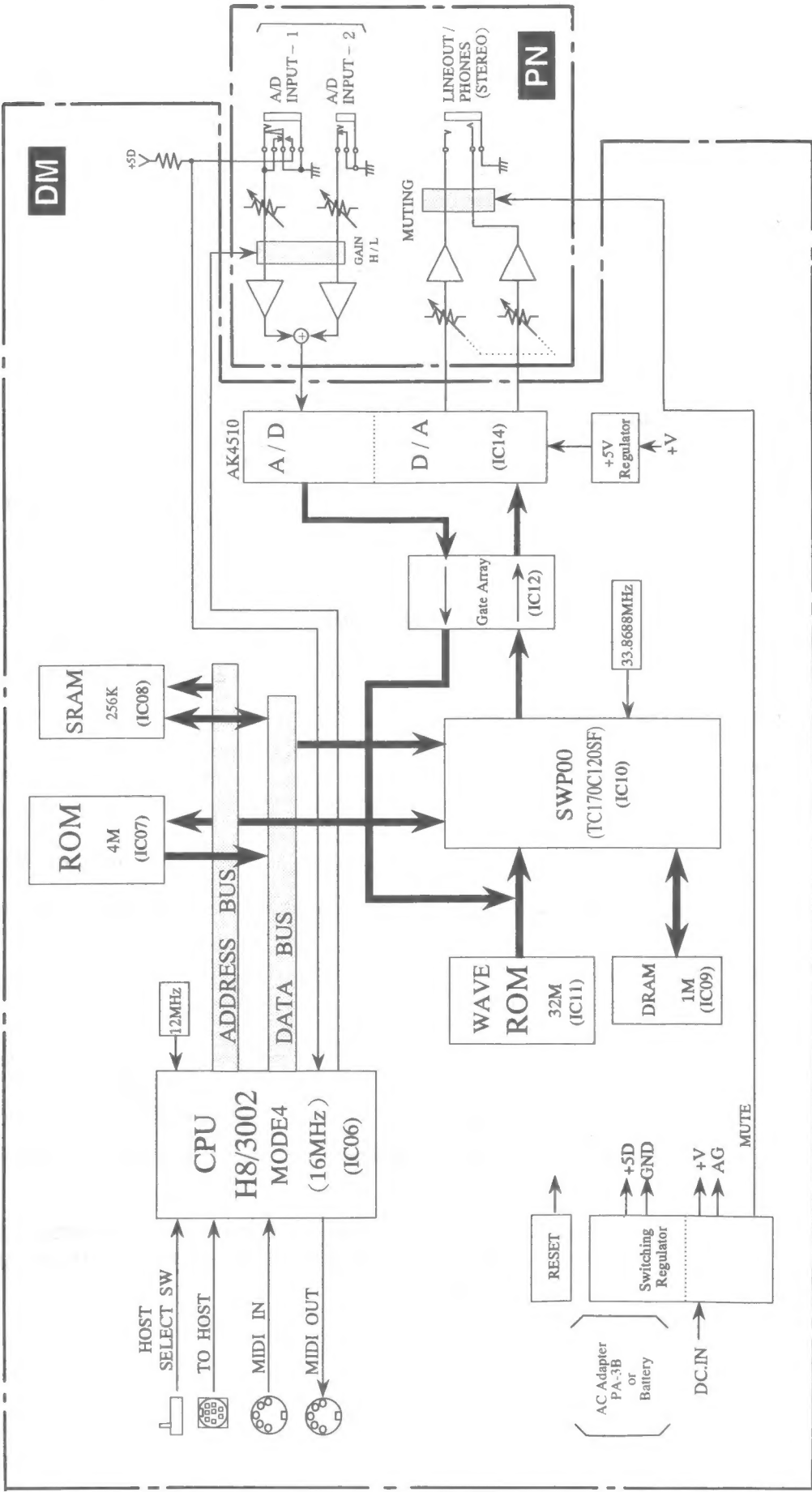
# ■ DISASSEMBLY PROCEDURE (分解手順)

### 1    Bottom Cover

1-1    Remove the five (5) screws marked [130], then the bottom cover can be removed. (Fig. 1)

### 1    ボトムカバー

1-1    [130]のネジ5本を外し、ボトムカバーを外します。(Fig. 1)

[130]    Bottom cover
(ボトムカバー)
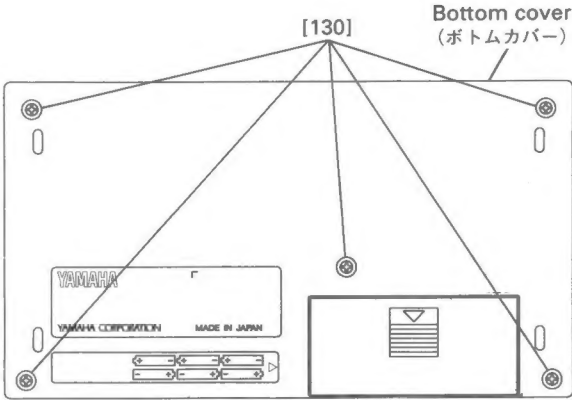
[130]:    Bind Head Tapping Screw-P (＋バインドPタイト)    2.6X8 MFZN2BL (EP620120)

**(Fig. 1)**

### 2    DM Circuit Board

2-1    Remove the bottom cover. (See procedure 1)

2-2    Remove the two (2) screws marked [70] and two (2) screws marked [40A]. (Fig. 2)

2-3    Open part [A] of shield sheet and remove solder the parts of [a], [b] and [c]. (Fig. 3)

2-4    Open parts [B] and [C] of shield sheet and disconnect the connector then the DM circuit board can be removed. (Fig. 4)

### 2    DM シート

2-1    ボトムカバーを外します。(1項参照)

2-2    [70]のネジ2本と[40A]のネジ2本を外します。(Fig. 2)

2-3    シールドシートの[A]部を開き、[a]、[b]、[c]部の半田を取り除きます。(Fig. 3)

2-4    シールドシートの[B]、[C]部を開き、コネクターを外してDMシートを外します。(Fig. 4)

Top cover (トップカバー)    Shield sheet (シールドシート)    Bottom cover (ボトムカバー)

[70]

[40A]
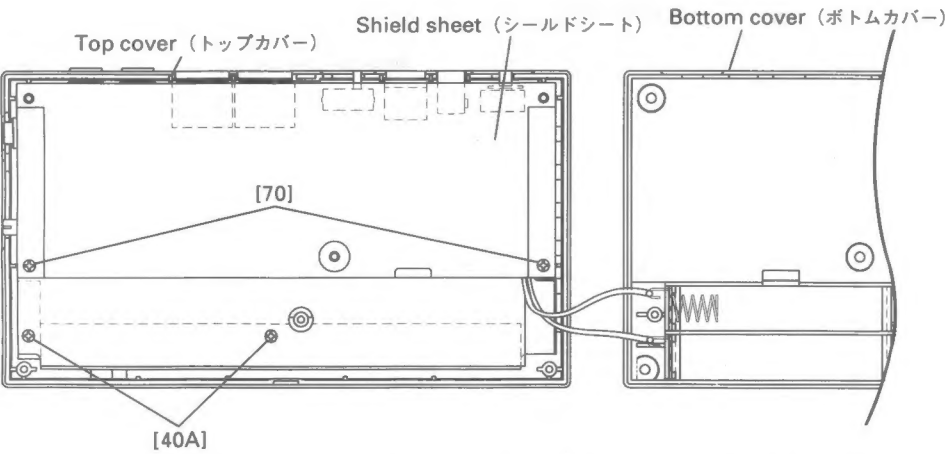
[40A]:    Bind Head Tapping Screw-P (＋バインドPタイト)    2.6X6 MFZN2Y (EP620170)
[70]:    Bind Head Tapping Screw-P (＋バインドPタイト)    2.6X6 MFZN2Y (EP620170)

**(Fig. 2)**
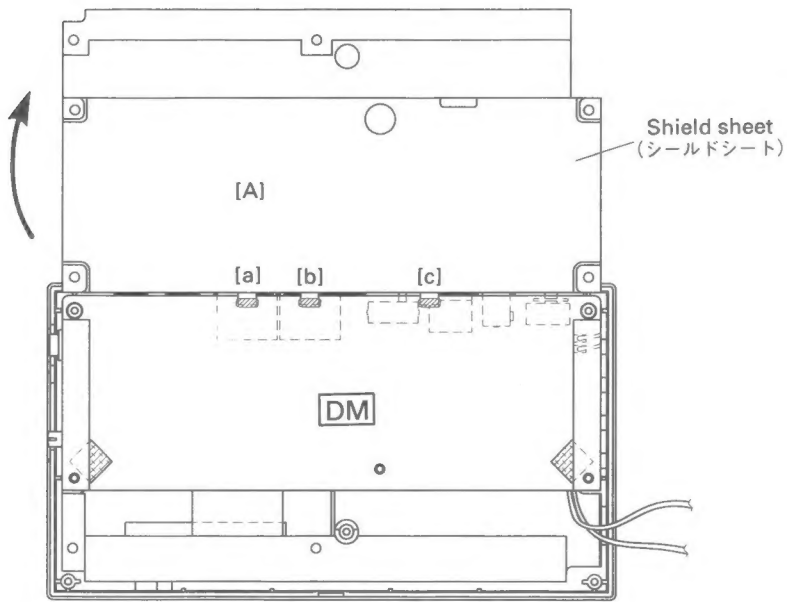
(Fig. 3)

## 3 PN Circuit Board

3-1 Remove the bottom cover. (See procedure 1)
3-2 Remove the DM circuit board. (See procedure 2)
3-3 Remove the two (2) screws marked [40B], then the PN circuit board can be removed. (Fig. 4)

## 3 PN シート

3-1 ボトムカバーを外します。(1 項参照)
3-2 DM シートを外します。 (2 項参照)
3-3 シールドシートの[D]、[E]部を開き、[40B]のネジ2本を外して PN シートを外します。(Fig. 4)
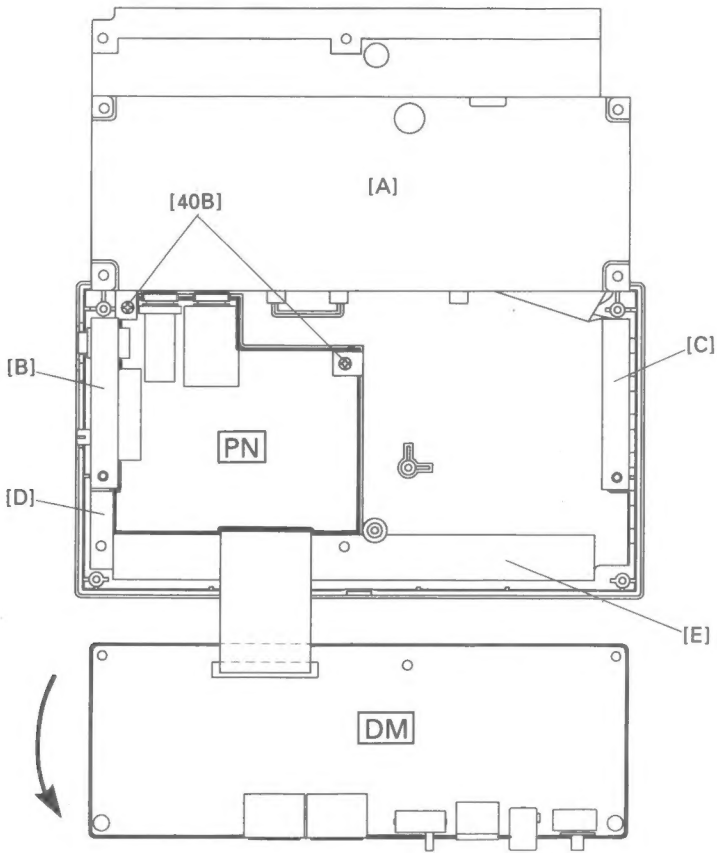


[40B]: Bind Head Tapping Screw-P (＋バインドＰタイト)　2.6X6 MFZN2Y (EP620170)

(Fig. 4)

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# ■ LSI PIN DESCRIPTION (LSI端子機能表)

## ● HD6413002FP16 (XQ375A00) CPU <H8/3002>

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | A21 | O | Address bus | 51 | A12 | O | |
| 2 | A20 | O | | 52 | A13 | O | |
| 3 | VCC | | Power supply | 53 | A14 | O | |
| 4 | PB0 | I/O | | 54 | A15 | O | Address bus |
| 5 | PB1 | /O | | 55 | A16 | O | |
| 6 | PB2 | /O | | 56 | A17 | O | |
| 7 | PB3 | /O | Port B | 57 | A18 | O | |
| 8 | PB4 | /O | | 58 | A19 | O | |
| 9 | PB5 | /O | | 59 | VSS | | Ground |
| 10 | PB6 | /O | | 60 | /WAIT | I | Bus cycle wait |
| 11 | PB7 | /O | | 61 | P61 | I/O | Port 6 |
| 12 | /RESO | I | Reset | 62 | P62 | I/O | |
| 13 | VSS | | Ground | 63 | φ | | Not connected |
| 14 | TXD0 | O | Transmit data (MIDI OUT) | 64 | /STBY | I | Stand-by mode signal |
| 15 | P91 | I/O | Port 9 | 65 | /RES | I | Reset |
| 16 | RXD0 | I | Receive data (MIDI IN) | 66 | NMI | I | Non-maskable interrupt |
| 17 | RXD1 | I | Receive data (Keyboard) | 67 | VSS | | Ground |
| 18 | P94 | I/O | Port 9 | 68 | EXTAL | I | Clock |
| 19 | SCK1 | O | Sync. signal | 69 | XTAL | O | |
| 20 | P40 | I/O | | 70 | VCC | | Power supply |
| 21 | P41 | I/O | | 71 | /AS | O | Address strobe |
| 22 | P42 | I/O | Port 4 | 72 | /RD | O | Read strobe |
| 23 | P43 | I/O | | 73 | /HWR | O | Write strobe (High) |
| 24 | VSS | | (Ground) | 74 | /LWR | O | Write strobe (Low) |
| 25 | P44 | I/O | | 75 | MD0 | I | |
| 26 | P45 | I/O | | 76 | MD1 | I | Mode select |
| 27 | P46 | I/O | | 77 | MD2 | I | |
| 28 | P47 | I/O | | 78 | AVCC | | Analog power supply |
| 29 | D08 | I/O | | 79 | VREF | I | Reference voltage |
| 30 | D09 | I/O | | 80 | AN0 | I | Analog data input (Power) |
| 31 | D10 | I/O | | 81 | AN1 | I | Analog data input (SUSTAIN) |
| 32 | D11 | I/O | Data bus | 82 | P72 | I/O | |
| 33 | D12 | I/O | | 83 | P73 | I/O | |
| 34 | D13 | I/O | | 84 | P74 | I/O | Port 7 |
| 35 | D14 | I/O | | 85 | P75 | I/O | |
| 36 | D15 | I/O | | 86 | P76 | I/O | |
| 37 | VCC | | Power supply | 87 | P77 | I/O | |
| 38 | A00 | O | | 88 | AVSS | | Analog ground |
| 39 | A01 | O | | 89 | P80 | I/O | Port 8 |
| 40 | A02 | O | | 90 | /CS3 | I | |
| 41 | A03 | O | | 91 | /CS2 | I | Chip select |
| 42 | A04 | O | | 92 | /CS1 | I | |
| 43 | A05 | O | | 93 | /CS0 | I | |
| 44 | A06 | O | Address bus | 94 | VSS | | Ground |
| 45 | A07 | O | | 95 | PA0 | I/O | |
| 46 | VSS | | (Ground) | 96 | PA1 | I/O | Port A |
| 47 | A08 | O | | 97 | PA2 | I/O | |
| 48 | A09 | O | | 98 | PA3 | I/O | |
| 49 | A10 | O | | 99 | A23 | O | Address bus |
| 50 | A11 | O | | 100 | A22 | O | |

● **TC170C120SF** (XQ036A00) **SWP00** (AWM Tone Generator) Standard Wave Processor

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | CA0 | I | ⎫ | 51 | MD1 | I | ⎫ |
| 2 | CA1 | I | | 52 | MD2 | I | |
| 3 | CA2 | I | | 53 | MD3 | I | |
| 4 | CA3 | I | | 54 | MD4 | I | Wave memory data bus |
| 5 | CA4 | I | CPU address bus | 55 | MD5 | I | |
| 6 | CA5 | I | | 56 | MD6 | I | |
| 7 | VDD | | (Power supply) | 57 | MD7 | I | ⎭ |
| 8 | CA6 | I | | 58 | VDD | | Power supply |
| 9 | CA7 | I | | 59 | MA0 | O | ⎫ |
| 10 | CA8 | I | | 60 | MA1 | O | |
| 11 | CA9 | I | | 61 | MA2 | O | |
| 12 | CA10 | I | ⎭ | 62 | MA3 | O | |
| 13 | CD0 | I/O | ⎫ | 63 | MA4 | O | |
| 14 | CD1 | I/O | | 64 | MA5 | O | |
| 15 | VSS | | (Ground) | 65 | MA6 | O | |
| 16 | CD2 | I/O | | 66 | VSS | | (Ground) |
| 17 | CD3 | I/O | CPU data bus | 67 | MA7 | O | |
| 18 | CD4 | I/O | | 68 | MA8 | O | |
| 19 | CD5 | I/O | | 69 | MA9 | O | |
| 20 | CD6 | I/O | | 70 | MA10 | O | |
| 21 | CD7 | I/O | ⎭ | 71 | MA11 | O | Wave memory address bus |
| 22 | VDD | | Power supply | 72 | MA12 | O | |
| 23 | CSN | I | Chip select | 73 | VDD | | (Power supply) |
| 24 | WRN | I | Data write strobe | 74 | MA13 | O | |
| 25 | RDN | I | Data read strobe | 75 | MA14 | O | |
| 26 | DACLR | O | DAC output (L or L/R) | 76 | MA15 | O | |
| 27 | DACR | O | DAC output (R) | 77 | MA16 | O | |
| 28 | BCLK | O | Bit clock | 78 | MA17 | O | |
| 29 | WCLK | O | Word clock | 79 | MA18 | O | |
| 30 | VSS | | Ground | 80 | VSS | | (Ground) |
| 31 | RD0 | I/O | ⎫ | 81 | MA19 | O | |
| 32 | RD1 | I/O | DRAM data bus | 82 | MA20 | O | |
| 33 | RD2 | I/O | | 83 | MA21 | O | |
| 34 | RD3 | I/O | ⎭ | 84 | MA22 | O | |
| 35 | RA0 | O | ⎫ | 85 | MA23 | O | ⎭ |
| 36 | RA1 | O | | 86 | ICN | I | Initial clear |
| 37 | RA2 | O | | 87 | VSS | | Ground |
| 38 | RA3 | O | DRAM address bus | 88 | XIN | I | Crystal osc. |
| 39 | RA4 | O | | 89 | XOUT | O | Crystal osc. |
| 40 | VSS | | (Ground) | 90 | VSS | | Ground |
| 41 | VDD | | (Power supply) | 91 | VDD | | Power supply |
| 42 | RA5 | O | | 92 | MCLKO | O | Clock output |
| 43 | RA6 | O | | 93 | MCLKI | I | Master clock input |
| 44 | RA7 | O | | 94 | SYI | I | Synch. signal |
| 45 | RA8 | O | ⎭ | 95 | SYSCLK | O | 1/2 master clock |
| 46 | RASN | O | DRAM row address bus | 96 | NSYSON | I | NSYS expansion enable |
| 47 | CASN | O | DRAM column address bus | 97 | TESTON | I | Test pin |
| 48 | RWEN | O | DRAM write enable | 98 | ACIN | I | Test pin |
| 49 | MD0 | I | Wave memory data bus | 99 | DCTEST | I | Test pin |
| 50 | VSS | | Power supply | 100 | VDD | | Ground |

### ● D65611GB-030-3B (XR976A0) Gate Array

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | WCLK | I | Word clock for AD/DA | 23 | NRESI | I | Reset |
| 2 | ADLR | I | AD serial data | 24 | VDD | | Power supply |
| 3 | DACLR16 | O | DA 16 bit serial data (L ch) | 25 | WD7 | O | |
| 4 | DACR16 | | DA 16 but serial data (R ch) | 26 | WD6 | O | |
| 5 | VDD | O | Power supply | 27 | GND | | (Ground) |
| 6 | SEL1 | I | } Extra mode select | 28 | WD5 | O | |
| 7 | SEL2 | I | | 29 | WD4 | O | Wave data bus |
| 8 | S1 | O | | 30 | GND | | (Ground) |
| 9 | S2 | O | Extra signal output | 31 | WD3 | O | |
| 10 | S3 | O | | 32 | WD2 | O | |
| 11 | NRES0 | O | Reset (low active) | 33 | GND | | (Ground) |
| 12 | RES0 | O | Reset (high active) | 34 | WD1 | O | |
| 13 | VDD | | Power supply | 35 | WD0 | O | |
| 14 | R1 | I | | 36 | GND | | (Ground) |
| 15 | R2 | I | Extra signal input | 37 | WA0 | I | |
| 16 | R3 | I | | 38 | WA21 | I | |
| 17 | GND | | Ground | 39 | VDD | | (Power supply) |
| 18 | NWROM321 | O | 32M bit ROM 1 select | 40 | WA22 | I | |
| 19 | NWROM322 | O | 32M bit ROM 2 select | 41 | WA23 | I | |
| 20 | NWROM162 | O | 16M bit ROM 2 select | 42 | DACLR | I | DA 18 bits serial data (L ch) |
| 21 | NWROM161 | O | 16M bit ROM 1 select | 43 | DACR | I | DA 18 bits serial data (R ch) |
| 22 | GND | | Ground | 44 | BCLK | I | Bit clock for AD/DA |

### ●AK4510-VS (XR391A00) ADC/DAC (Analog to Digital Converter/Digital to Analog Converter)

| PIN NO. | NAME | I/O | FUNCTION | PIN NO. | NAME | I/O | FUNCTION |
|---|---|---|---|---|---|---|---|
| 1 | VCOM | O | Common voltage output | 15 | VD | | Digital power supply |
| 2 | VA1 | | Analog power supply for ADC, VREF | 16 | DGND | | Digital ground |
| 3 | AGND1 | I | Analog ground for ADC, VREF | 17 | SDTI | I | Serial data input |
| 4 | AINR | I | Analog input (L ch) | 18 | LOOP | I | Digital loop back |
| 5 | ZEROR | I | Zero input (R ch) | 19 | TST1 | O | |
| 6 | AINL | I | Analog input (R ch) | 20 | TST2 | O | } Test pin |
| 7 | ZEROL | I | Zero input (L ch) | 21 | TST3 | O | |
| 8 | PD | I | Power down | 22 | VREF | O | Reference voltage |
| 9 | CMODE | I | Master clock select(L=256fs, H=384fs) | 23 | TST4 | I | Test pin |
| 10 | MCLK | I | Master clock input | 24 | AOUTL | O | Analog output (L ch) |
| 11 | L/R | I | L/R channel select | 25 | TST5 | I | Test pin |
| 12 | SCLK | I | Serial data clock | 26 | AOUTR | O | Analog output (R ch) |
| 13 | SDTO | O | Serial data output | 27 | AGND2 | | Analog ground for DAC |
| 14 | VB | | Power supply | 28 | VA2 | | Analog power supply for DAC |

# ■ IC BLOCK DIAGRAM (ICブロック図)

- **MC34051MEL** (XP881A00)
  Line Transceiver

| | | |
|---|---|---|
| REC1 IN - | 1 | 16 Vcc |
| REC1 IN + | 2 | 15 DR1 IN |
| REC1 OUT | 3 | 14 DR1 OUT |
| DR1 EN | 4 | 13 DR1 OUT |
| REC2 OUT | 5 | 12 DR2 EN |
| REC2 IN + | 6 | 11 DR2 OUT |
| REC2 IN - | 7 | 10 DR2 OUT |
| GND | 8 | 9 DR2 IN |

- **TC7W14F** (XR336A00)
  Inverter

| | | |
|---|---|---|
| 1A | 1 | 8 Vcc |
| 3Y | 2 | 7 1Y |
| 2A | 3 | 6 3A |
| GND | 4 | 5 2Y |
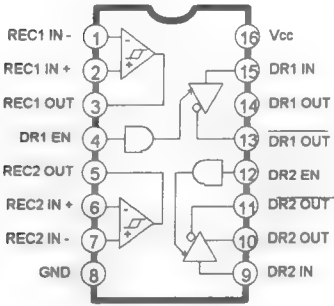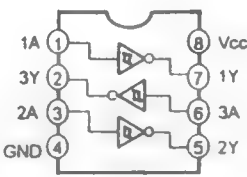
- **SC7SU04FEL** (XI348A00)
  Inverter

| | | |
|---|---|---|
| NC | 1 | 5 VDD |
| IN | 2 | |
| VSS | 3 | 4 OUT |
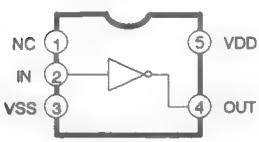
# ■ CIRCUIT BOARDS (シート基板図)

## ● DM Circuit Board
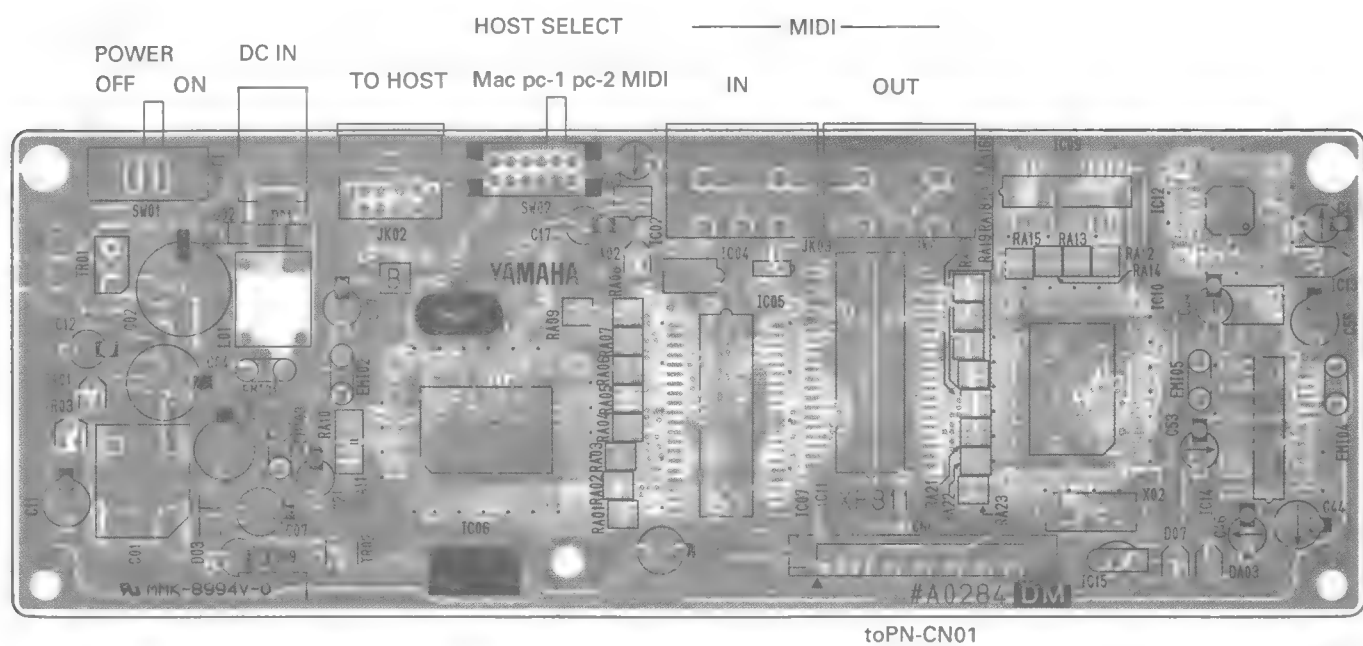


**Components side** (部品側)
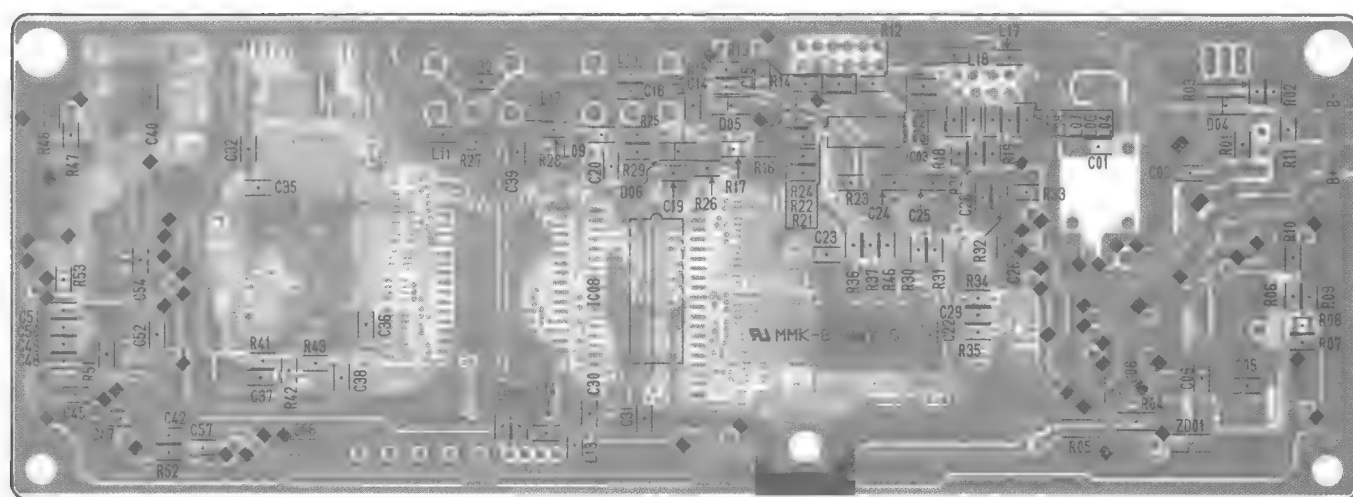


**Pattern side** (パターン側)

2NA1-VU67550 ⚠

Notes)
Circuit Board: DM (VU675700) XR811B0

1. **IC**

| | | |
|---|---|---|
| IC 01: | SI-8401L (XR925A00) REGULATOR +5V |
| IC 02: | SC7SU04FEL (XI348A00) INVERTOR |
| IC 03: | MC34051MEL (XP881A00) LINE TRANSCEIVE |
| IC 05: | TC7W14F (XR336A00) INVERTOR |
| IC 06: | HD6413002FP16 (XQ375A00) CPU |
| IC 07: | MSM534002C (XS289A00) SYSTEM ROM 4M |
| IC 08: | UPD43256BGU-70L (XR115A00) SRAM 256K |
| IC 09: | LH64256BK-70 (XR645A00) DRAM 256K |
| IC 10: | TC170C120SF-003 (XQ036A00) SWP00 |
| IC 11: | MX23C3210MC-12 (XR709A00) WAVE ROM |
| IC 12: | D65611GB-030-3B (XR976A00) GATE ARRAY |
| IC 13: | PST572CMT-R (XL122A00) RESET |
| IC 14: | AK4510-VS (XR391A00) ADC/DAC |
| IC 15: | S-81250PG-Z (XR506A00) REGULATOR +5V |

2. **Transistor**

| | |
|---|---|
| TR 01: | 2SB1416(TA) Q,R (VH481100) |
| TR 02: | 2SC3326 A,B TE85 (VD303700) |
| TR 03: | 2SA1162 O,Y (VJ927200) |

3. **Diode**

| | |
|---|---|
| D 01-03: | D1F60 (VS201100) |
| D 04-06: | RLS-73 (VB797600) |
| D 07: | SB007-03CP (VU762200) |

4. **Diode Array**

| | |
|---|---|
| DA 01,03: | DAN217 0.3A X (VN956800) |
| DA 02: | DAP202K (VD455100) |

5. **Zener Diode**

| | |
|---|---|
| ZD 01: | RLZJ 10B 10.0V (VJ150900) |

6. **Photo Coupler**

| | |
|---|---|
| IC 04: | PC-900V (VG181900) |

7. **Monolithic Ceramic Cap.**

| | |
|---|---|
| C 01,03,05,06, 08,14-16,19, 20,22,23,26, 30-32,35,36, 39,40,45,47, 52,54,56,57: | F 0.100 25V Z (UB245100) |
| C 18,28,29: | F 0.010 50V Z (UB044100) |
| C 24,25: | SL 22P 50V J (UB051220) |
| C 37: | D 8P 50V J (VJ899300) |
| C 38: | SL 12P 50V J (UB051120) |
| C 42: | F 0.470 16V Z (UB445470) |
| C 48-51: | B 2200P 50V K (UB013220) |

8. **Electrolytic Cap.**

| | |
|---|---|
| C 02: | 330.00 25.0V (VL452700) |
| C 04: | 470.00 16.0V (VI254700) |
| C 07,44,55: | 100.00 10.0V (UI528100) |
| C 09: | 47.00 16.0V (UI537470) |
| C 10,11: | 100.00 16.0V (UI538100) |
| C 12: | 4.70 50.0V (UI566470) |
| C 17,21,27, 34,41,46, 53: | 10.00 16.0V (UI537100) |
| C 43: | 470.00 10.0V (VF680100) |

9. **Electrolytic Cap. BP**

| | |
|---|---|
| C 13: | 47.00 10.0V (VT759200) |

10. **Chip Inductance**

| | | |
|---|---|---|
| L 01: | SH-302 (VR772400) |
| L 02,17-20 | BLM21B050S (VL139600) |
| L 03-16: | BLM21B751S 2125 (VS740100) |

11. **Carbon Resistor (chip)**

| | | |
|---|---|---|
| R 01,08: | 47.0K 0.1 J (RD257470) |
| R 02,03: | 1.8K 0.1 J (RD256180) |
| R 04: | 470.0 1/4 J (RD155470) |
| R 05: | 100.0 1/4 J (RD155100) |
| R 06: | 330.0 0.1 J (RD255330) |
| R 07,30,31: | 68.0 0.1 J (RD254680) |
| R 09: | 100.0K 0.1 J (RD258100) |
| R 10,11: | 150.0 0.1 J (RD255150) |
| R 12-14,18-20, 23,24,29,33, 34,36,37,52: | 10.0K 0.1 J (RD257100) |
| R 15,35,51: | 1.0K 0.1 J (RD256100) |
| R 16,17,41: | 100.0 0.1 J (RD255100) |
| R 21,22,25, 27,28: | 220.0 0.1 J (RD255220) |
| R 26: | 270.0 0.1 J (RD255270) |
| R 32: | 3.3K 0.1 J (RD256330) |
| R 42: | 680.0 0.1 J (RD255680) |
| R 43: | 1.0M 0.1 J (RD259100) |
| R 46: | 4.7K 0.1 J (RD256470) |
| R 47: | 22.0K 0.1 J (RD257220) |
| R 48: | 47.0 0.1 J (RD254470) |
| R 53: | 10.0 0.1 J (RD254100) |

12. **Resistor Array**

| | |
|---|---|
| RA 01,02: | 68X4 (RE044680) |
| RA 03,04,10: | 100X4 (RE045100) |
| RA 05-09,13-17 | 220X4 (RE045220) |
| RA 11: | EXB-V8V103JV (VM506100) |
| RA 12,18-23 | 470X4 (RE045470) |

13. **Slide Switch**

| | |
|---|---|
| SW01: | SSSF12302A (VN990400) POWER |
| SW02: | SSSF124-S06N-0 (VN210700) HOST SELECT |

14. **DC-IN Connector**

| | |
|---|---|
| JK 01: | 16V DC 3A HEC23 (VJ207400) DC IN |
| JK 02: | DIN 8P MD-S810 (VM761000) TO HOST |
| JK 03,04: | 5P TCS5076-95-15 (VS739900) MIDI IN, OUT |

15. **Connector**

| | |
|---|---|
| CN 01: | 52147 15P TE (VF667600) to PN-CN01 |

16. **Connector Assembly**

| | |
|---|---|
| B+: | RE (VS550300) |
| B-: | BL (VS550400) |

17. **LC Filter**

| | |
|---|---|
| EMI01,02,04, 05: | DSS306-93F223Z1 (VD542700) |
| EMI03: | STF-104ZB-TBM (VR193800) |

18. **Quartz Crystal Unit**

| | |
|---|---|
| X 01: | AT-49/12.0000MHZ (VE463500) |
| X 02: | 33.8688M SMD-49 (VT685200) |

● **PN Circuit Board**
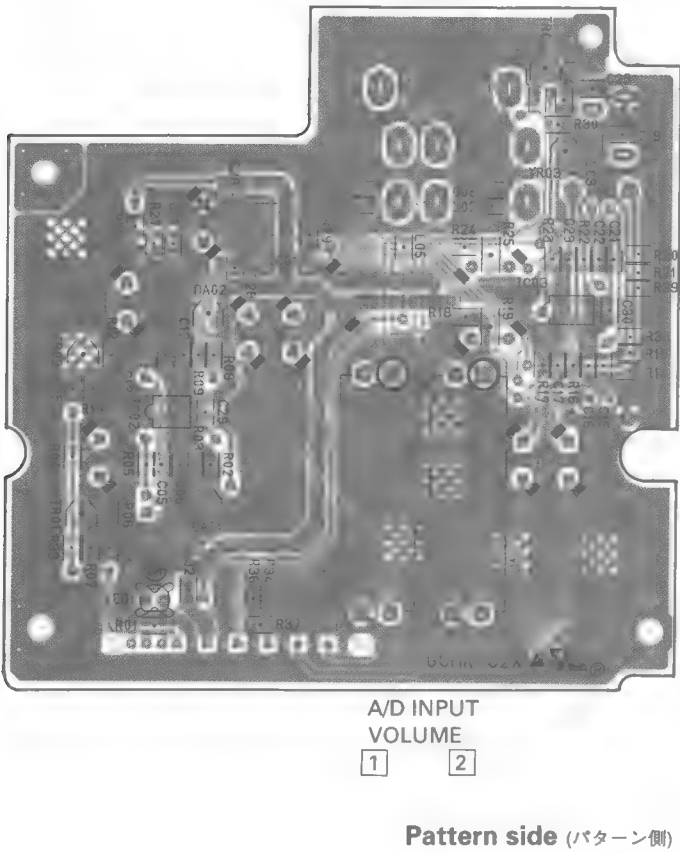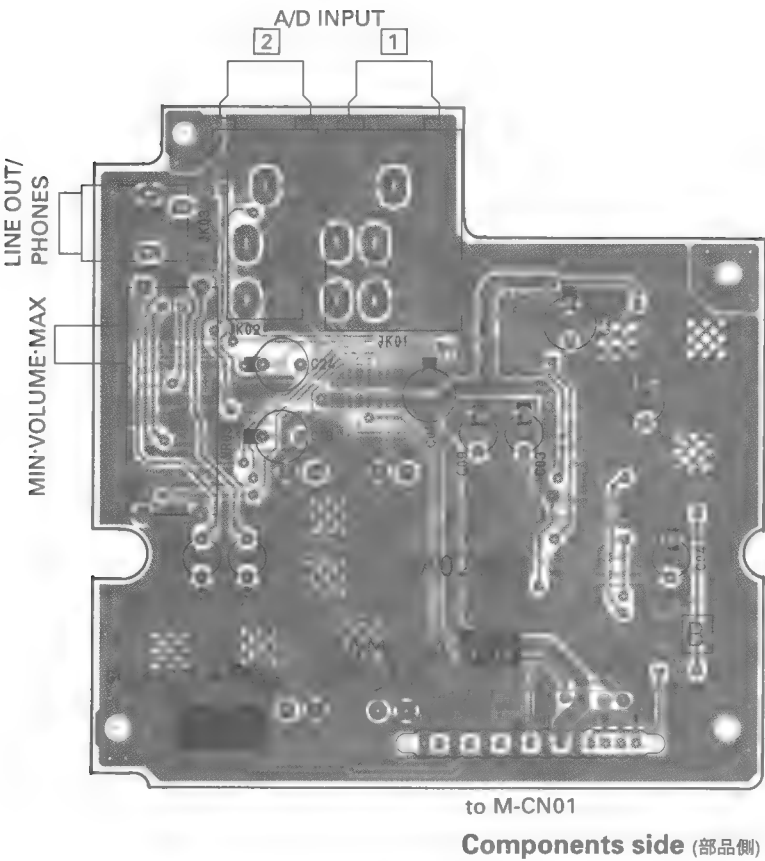
A/D INPUT
2    1

LINE OUT/
PHONES

MIN·VOLUME·MAX

to M-CN01

**Components side** (部品側)

A/D INPUT
VOLUME
1    2

**Pattern side** (パターン側)

2NA1-VU67560 △2

**Notes)**

Circuit Board:   PN (VU675800) XR812B0

1. **IC**
   IC 01,02:   UPC4570G2 (XF291A00) OP AMP
   IC 03:   NJM4556AMT1 (XQ138A00) OP AMP

2. **Transistor**
   TR 01,02:   2SC2462LCTR C (VQ395500)
   TR 03,04:   2SC3326 A,B TE85 (VD303700)

3. **Diode Array**
   DA 01,02:   DAN217   0.3A   X (VN956800)

4. **LED**
   LED1:   SLP-981B-51 RE (VA835100)

5. **Monolithic Ceramic Cap.**
   C 02,06-08,
   12,13,17,
   23:   SL 100P 50V J (UB052100)
   C 05,11,:   SL 22P 50V J (UB051220)
   C 15,21:   B 3300P 50V K (UB013330)
   C 16,22,26,
   28-30:   F 0.100 25V Z (UB245100)
   C 19,25:   B 1000P 50V K (UB013100)

6. **Electrolytic Cap.**
   C 01,18,24:   100.00   16.0V (UI538100)
   C 03,09,27:   10.00   16.0V (UI537100)
   C 04,10:   4.70   50.0V (UI566470)

7. **Electrolytic Cap. BP**
   C 14,20:   10.00   16.0V (VB408900)

8. **Chip Inductance**
   L 01-05:   BLM21B751S 2125 (VS740100)
   L 06,07:   BLM21B050S (VL139600)

9. **Carbon Resistor (chip)**
   R 01:   330.0 0.1 J (RD255330)
   R 02,05,08,
   11,28,29,
   38,39:   100.0K 0.1 J (RD258100)
   R 03,04,09,
   10,30,31:   1.0K 0.1 J (RD256100)
   R 06,12:   12.0K 0.1 J (RD257120)
   R 07,13,33,
   35:   33.0K 0.1 J (RD257330)
   R 14,20:   22.0K 0.1 J (RD257220)
   R 15,21,26:   9.1K 0.1 J (RD256910)
   R 16,22:   8.2K 0.1 J (RD256820)
   R 17,23:   18.0K 0.1 J (RD257180)
   R 18,24,27,
   32:   10.0K 0.1 J (RD257100)
   R 19,25:   47.0 1/4 J (RD154470)
   R 34,36:   4.7K 0.1 J (RD256470)
   R 37:   47.0K 0.1 J (RD257470)

10. **Phone Jack**
    JK 01:   HLJ4306 (VI662400) A/D INPUT 1
    JK 02:   YKB21-5012 (VB312600) A/D INPUT 2
    JK 03:   YKB21-5130 (VI435500) LINE OUT
    /PHONES

11. **Connector Assembly**
    CN 01:   15P (VT763400) to M-CN01

12. **Slide Variable Resistor**
    VR 01,02:   A50K RS15M111J00 (VU540800) A/D
    INPUT VOLUME
    VR 03:   C 10.0K RS15H12A (VP276500)
    VOLUME

# ■ TEST PROGRAM

## 1  REPARATIONS

Testing the MU10 will require the following measuring instruments and jigs.

Measuring instruments:  MIDI data transmitter which can transmit System Exclusive Message; MIDI data monitor; low frequency oscillator (sinusoidal, distortion less than 0.1%); Frequency counter; Oscilloscope; Level meter (JIS-C filter); Distortion meter

Jigs:  MIDI cable etc.,,

Switch and Volumes Setting

| | |
|---|---|
| VOLUME | :Maximum |
| A/D INPUT VOLUME | :Maximum |
| HOST SELECT Switch | :MIDI |
| Output terminal | |
| Load Impedance | :33 Ω |

## 2  RUNNING THE TESTS

2-1  Connect the MU10, MIDI data transmitter and MIDI data monitor as shown below.
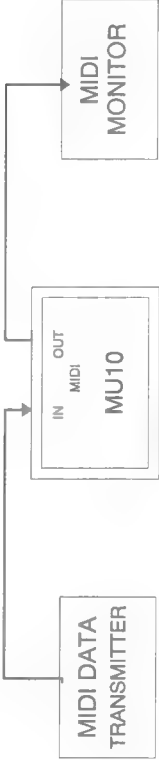


2-2  To carry out the test, transmit the MIDI data as shown on the table below:

● The test results can be monitored by the MIDI data monitor.

● For output level measurements, use the low frequency oscillator, frequency counter, oscilloscope, level meter and distortion meter.

| TEST NO | TEST | MIDI INPUT CODE | TEST RESULT (MIDI OUTPUT CODE) | |
|---|---|---|---|---|
| A | TEST ENTRY | [ F0 43 10 18 5A 00 F7 ] | [ F0 0a 0b 0c F7 ] | |
| 0 | SYSTEM RAM | [ A0 00 00 ] | OK  [ A0 00 01 ] | NG  [ A0 00 02 ] |
| 1 | WAVE ROM | [ A0 01 00 ] | OK  [ A0 01 01 ] | NG  [ A0 01 02 ] |

| TEST NO. | TEST | MIDI INPUT CODE | TEST RESULT (MIDI OUTPUT CODE) |
|---|---|---|---|
| 2 | HOST SELECT SWITCH | [ A0 02 00 ] | Change the HOST SELECT switch in the following order. MAC→PC1→PC2→MIDI.<br>OK  [ A0 02 01 ] |
| 3 | HOST Tx / Rx | [ A0 03 00 ] | OK  [ A0 03 01 ]<br>NG  [ A0 03 02 ] |
| 4 | LED AND BATTERY | [ A0 04 00 ] | The LED blinks when the battery voltage is 8 V  ±0.3 V. |
| 5 | L-CHANNEL SOUND | [ A0 05 00 ] | LINE OUT L:    1 kHz  ±3 Hz,    sine wave, -3.8 dBm  ±2 dB,    distortion 0.3 %<br>LINE OUT R:    less than -75 dBm |
| 6 | R-CHANNEL SOUND | [ A0 06 00 ] | LINE OUT L:    less than -75 dBm<br>LINE OUT R:    1 kHz  ±3 Hz,    sine wave, -3.8 dBm  ±2 dB,    distortion 0.3 % |
| 7 | EQ CHECK LOW | [ A0 07 00 ] | LINE OUT L:    125 Hz  ±3 Hz,    sine wave, 2.7 dBm  ±2 dB<br>LINE OUT R:    125 Hz  ±3 Hz,    sine wave, 2.7 dBm  ±2 dB |
| 8 | EQ CHECK HIGH | [ A0 08 00 ] | LINE OUT L:    8 kHz  ±3 Hz,    sine wave, 4.5 dBm  ±2 dB<br>LINE OUT R:    8 kHz  ±3 Hz,    sine wave, 4.5 dBm  ±2 dB |
| 9 | EFFECT AND D-RAM | [ A0 09 00 ] | LINE OUT L:    1 kHz  ±3 Hz,    sine wave, 3.7 dBm  ±2 dB<br>LINE OUT R:    1 kHz  ±3 Hz,    sine wave, 3.7 dBm  ±2 dB |
| 10 | A/D INPUT LOW | [ A0 0A 00 ] | Apply a 1 kHz, -15 dBm sine wave to A/D INPUT 1.<br>    LINE OUT L:    1 kHz  ±3 Hz,    sine wave, -2.8 dBm  ±2 dB,    distortion 0.3 %<br>Apply a 1 kHz, -15 dBm sine wave to A/D INPUT 2.<br>    LINE OUT R:    1 kHz  ±3 Hz,    sine wave, -2.8 dBm  ±2 dB |
| 11 | A/D INPUT HIGH | [ A0 0B 00 ] | Apply a 1 kHz, -40 dBm sine wave to A/D INPUT 1.<br>    LINE OUT L:    1 kHz  ±3 Hz,    sine wave -1.8 dBm  ±2 dB,    distortion 0.3 %<br>Apply a 1 kHz, -40 dBm sine wave to A/D INPUT 2.<br>    LINE OUT R:    1 kHz  ±3 Hz,    sine wave -1.8 dBm  ±2 dB |
| 12 | EXIT | [ A0 0C 00 ] | [ A0 0C 01 ] |

# ■ テストプログラム

## 1 測定条件

テストプログラムを実行するには、下記の測定器、治具が必要です。

測定器　MIDIデータ送信機 (System Exclusive Message が送信出来るもの)、MIDIモニター、低周波発振器 (正弦波、歪率 0.1%以下)、周波数カウンター、オシロスコープ、レベル計 (JIS-Cフィルター)、歪率計

治具　MIDIケーブルなど

スイッチとボリュームの設定

VOLUME: 最大
A/D INPUT VOLUME: 最大
HOST SELECT スイッチ: MIDI

出力端子　負荷インピーダンス: 33 Ω

## 2 テストの進め方

2-1　MU10 と MIDI データ送信機、MIDI モニターを下図のように接続します。
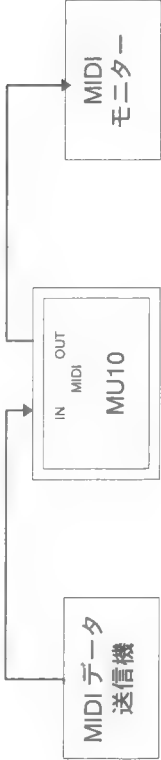


2-2　テストは、MIDI データ送信機から MU10 に下表の MIDI 入力コードを送信してテストを実行します。

2-3　テスト結果は、MIDI データを MIDI モニターにて確認します。
(出力レベル測定には、低周波発振器、周波数カウンター、オシロスコープ、レベル計 (JIS-Cフィルター)、歪率計を使用して確認します。)

| テスト NO. | テスト | MIDI 入力コード | 判　定　(MIDI 出力コード) |
|---|---|---|---|
| A | テストエントリー | [ F0 43 10 18 5A 00 F7 ] | [ F0 0a 0b 0c F7 ] |
| 0 | SYSTEM RAM | [ A0 00 00 ] | OK　[ A0 00 01 ]<br>NG　[ A0 00 02 ] |
| 1 | WAVE ROM | [ A0 01 00 ] | OK　[ A0 01 01 ]<br>NG　[ A0 01 02 ] |

| テスト NO. | テスト | MIDI 入力コード | 判定 （MIDI 出力コード） |
|---|---|---|---|
| 2 | HOST SELECT SW | [ A0 02 00 ] | HOST SELECT SW を MAC→PC1→PC2→MIDI の順に切り替えます。<br>OK [ A0 02 01 ] |
| 3 | HOST Tx / Rx | [ A0 03 00 ] | OK [ A0 03 01 ]<br>NG [ A0 03 02 ] |
| 4 | LED と BATTERY | [ A0 04 00 ] | LED が一定周期でブリンクします。 （電池電圧 8 V ±0.3 V のとき） |
| 5 | L-CHANNEL 発音 | [ A0 05 00 ] | LINE OUT L: 1 kHz ±3 Hz, サイン波, -3.8 dBm, 歪率 0.3 %<br>LINE OUT R: -75 dBm 以下 |
| 6 | R-CHANNEL 発音 | [ A0 06 00 ] | LINE OUT L: -75 dBm 以下<br>LINE OUT R: 1 kHz ±3 Hz, サイン波, -3.8 dBm, 歪率 0.3 % |
| 7 | EQ-LOW 動作 | [ A0 07 00 ] | LINE OUT L: 125 Hz ±3 Hz, サイン波, 2.7 dBm ±2 dB<br>LINE OUT R: 125 Hz ±3 Hz, サイン波, 2.7 dBm ±2 dB |
| 8 | EQ-HIGH 動作 | [ A0 08 00 ] | LINE OUT L: 8 kHz ±3 Hz, サイン波, 4.5 dBm ±2 dB<br>LINE OUT R: 8 kHz ±3 Hz, サイン波, 4.5 dBm ±2 dB |
| 9 | エフェクトと D-RAM 動作 | [ A0 09 00 ] | LINE OUT L: 1 kHz ±3 Hz, サイン波, 3.7 dBm ±2 dB<br>LINE OUT R: 1 kHz ±3 Hz, サイン波, 3.7 dBm ±2 dB |
| 10 | A/D INPUT LOW | [ A0 0A 00 ] | A/D INPUT 1 端子に、1 kHz ±3 Hz, サイン波, -15 dBm の信号を加えたとき、<br>LINE OUT L: 1 kHz ±3 Hz, サイン波, -2.8 dBm ±2 dB, 歪率 0.3 %<br>A/D INPUT 2 端子に、1 kHz ±3 Hz, サイン波, -15 dBm の信号を加えたとき<br>LINE OUT R: 1 kHz ±3 Hz, サイン波, -2.8 dBm ±2 dB |
| 11 | A/D INPUT HIGH | [ A0 0B 00 ] | A/D INPUT 1 端子に、1 kHz ±3 Hz, サイン波, -40 dBm の信号を加えたとき<br>LINE OUT L: 1 kHz ±3 Hz, サイン波, -1.8 dBm ±2 dB, 歪率 0.3 %<br>A/D INPUT 2 端子に、1 kHz ±3 Hz, サイン波, -40 dBm の信号を加えたとき<br>LINE OUT R: 1 kHz ±3 Hz, サイン波, -1.8 dBm ±2 dB |
| 12 | EXIT | [ A0 0C 00 ] | [ A0 0C 01 ] |

# ■ MIDI DATA FORMAT

By sending various types of MIDI messages you can directly control and change the settings on the MU10. Please refer to the owner's manual of your software and hardware for information about how to transmit MIDI messages to the MU10.

## ■ RECEPTION

### 1. CHANNEL MESSAGES

#### 1.1 Key On / Key Off
Messages which are generated when the keyboard is played.
Reception note range = C-2 (0)-G8 (127), C3 = 60
Velocity range = 1-127 (Only the Key On velocity is received)
Key On: Generated when a key is pressed.
Key Off: Generated when a key is released.
Each message includes a specific note number which corresponds to the key which is pressed, plus a velocity value based on how hard the key is struck.
If the Multi Part parameter Rcv NOTE MESSAGE (Table 1-4) = OFF for a specific Part, that Part will ignore Key On and Key Off messages.

If the Drum Setup parameter Rcv NOTE OFF (Table 1-6) = OFF, the Drum Part will ignore Key Off messages.
If the Drum Setup parameter Rcv NOTE ON = OFF (Table 1-6), the Drum Part will ignore Key On messages.

#### 1.2 Control Change
Messages which control volume, panning, and other controller parameters.
Each type of Control Change message is assigned to a specific control number.
If the Multi Part parameter for each Control Change Receive (Table 1-4, nn30-nn40) = OFF, that Part will ignore the specific Control Change message.

#### 1.2.1 Bank Select
Messages which select variation Voice bank numbers.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 0 | Bank Select MSB | 0:Normal, 63:User Voices, 64:SFX, 126:SFX Kit, 127:Drum |
| 32 | Bank Select LSB | 0...127 |

# Decimal - Hexadecimal Conversion Chart

Many MIDI messages listed in the MIDI Data Format section, are expressed in hexadecimal numbers. The chart below lists the corresponding decimal number for each hexadecimal number. (Hexadecimal numbers may include the letter "H" as a suffix.)

| Dec | Hex | Dec | Hex | Dec | Hex | Dec | Hex | Dec | Hex | Dec | Hex | Dec | Hex | Dec | Hex |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 00 | 16 | 10 | 32 | 20 | 48 | 30 | 64 | 40 | 80 | 50 | 96 | 60 | 112 | 70 |
| 1 | 01 | 17 | 11 | 33 | 21 | 49 | 31 | 65 | 41 | 81 | 51 | 97 | 61 | 113 | 71 |
| 2 | 02 | 18 | 12 | 34 | 22 | 50 | 32 | 66 | 42 | 82 | 52 | 98 | 62 | 114 | 72 |
| 3 | 03 | 19 | 13 | 35 | 23 | 51 | 33 | 67 | 43 | 83 | 53 | 99 | 63 | 115 | 73 |
| 4 | 04 | 20 | 14 | 36 | 24 | 52 | 34 | 68 | 44 | 84 | 54 | 100 | 64 | 116 | 74 |
| 5 | 05 | 21 | 15 | 37 | 25 | 53 | 35 | 69 | 45 | 85 | 55 | 101 | 65 | 117 | 75 |
| 6 | 06 | 22 | 16 | 38 | 26 | 54 | 36 | 70 | 46 | 86 | 56 | 102 | 66 | 118 | 76 |
| 7 | 07 | 23 | 17 | 39 | 27 | 55 | 37 | 71 | 47 | 87 | 57 | 103 | 67 | 119 | 77 |
| 8 | 08 | 24 | 18 | 40 | 28 | 56 | 38 | 72 | 48 | 88 | 58 | 104 | 68 | 120 | 78 |
| 9 | 09 | 25 | 19 | 41 | 29 | 57 | 39 | 73 | 49 | 89 | 59 | 105 | 69 | 121 | 79 |
| 10 | 0A | 26 | 1A | 42 | 2A | 58 | 3A | 74 | 4A | 90 | 5A | 106 | 6A | 122 | 7A |
| 11 | 0B | 27 | 1B | 43 | 2B | 59 | 3B | 75 | 4B | 91 | 5B | 107 | 6B | 123 | 7B |
| 12 | 0C | 28 | 1C | 44 | 2C | 60 | 3C | 76 | 4C | 92 | 5C | 108 | 6C | 124 | 7C |
| 13 | 0D | 29 | 1D | 45 | 2D | 61 | 3D | 77 | 4D | 93 | 5D | 109 | 6D | 125 | 7D |
| 14 | 0E | 30 | 1E | 46 | 2E | 62 | 3E | 78 | 4E | 94 | 5E | 110 | 6E | 126 | 7E |
| 15 | 0F | 31 | 1F | 47 | 2F | 63 | 3F | 79 | 4F | 95 | 5F | 111 | 6F | 127 | 7F |

You can select the Voice banks with MSB and LSB numbers. MSB and LSB functions differently depending on the play mode.
In XG mode, MSB numbers select Voice type (Normal Voice or Drum Voice), and LSB numbers select Voice banks. In TG300B mode, LSB is fixed, and MSB numbers select Voice banks.
A new bank selection will not become effective until the next Program Change message is received.

### 1.2.2 Modulation

Messages which control vibrato depth.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 1 | Modulation | 0...127 |

A setting of 0 = vibrato off, and a setting of 127 = maximum vibrato.

### 1.2.3 Portamento Time

Messages which control the duration of portamento, or a continuous pitch glide between successively played notes.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 5 | Portamento Time | 0...127 |

When the parameter 1.2.9 Portamento = ON, values will adjust the speed of pitch change.
A setting of 0 = minimum portamento time, and 127 = maximum portamento time.

### 1.2.4 Data Entry

Messages which set the value for the parameter specified by RPN/NRPN.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 6 | Data Entry MSB | 0...127 |
| 38 | Data Entry LSB | 0...127 |

Parameter value is determined by combining MSB and LSB.

### 1.2.5 Main Volume

Messages which control the volume of each Part.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 7 | Main Volume | 0...127 |

A setting of 0 = minimum volume, and 127 = maximum volume.

### 1.2.6 Pan

Messages which control the stereo panning position of each Part.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 10 | Pan | 0...127 |

A setting of 0 = extreme left position, and 127 = extreme right position.

### 1.2.7 Expression

Messages which control intonation expression of each Part.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 11 | Expression | 0...127 |

A setting of 0 = minimum expression volume, and 127 = maximum expression volume.

### 1.2.8 Hold1

Messages which control sustain on/off.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 64 | Hold1 | 0...127 |

Settings between 0-63 = sustain off, and settings between 64-127 = sustain on.

### 1.2.9 Portamento

Messages which control portamento on/off.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 65 | Portamento | 0...127 |

Settings between 0-63 = portamento off, and settings between 64-127 = portamento on.
The parameter 1.2.3 Portamento Time controls the portamento speed.

### 1.2.10 Sostenuto

Messages which control sostenuto on/off.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 66 | Sostenuto | 0...127 |

Holding specific notes and then pressing and holding the sostenuto pedal will sustain those notes as you play subsequent notes, until the pedal is released. Settings between 0-63 = sostenuto off, and settings between 64-127 = sostenuto on.

### 1.2.11 Soft Pedal

Messages which control soft pedal on/off.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 67 | Soft Pedal | 0...127 |

Notes played while holding the soft pedal will be dampened. Settings between 0-63 = soft pedal off, and settings between 64-127 = soft pedal on.

### 1.2.12 Harmonic Content

Messages which adjust the resonance set for each Voice.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 71 | Harmonic Content | 0...127 (0 : -64, 64 : +0, 127 : +63) |

The value set here is an offset value which will be added to or subtracted from the Voice data.
Higher values will result in a more resonant sound.
Depending on the Voice, the effective range may be narrower than the range available for adjustment.

### 1.2.13 Release Time

Messages which adjust the envelope release time set for each Voice.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 72 | Release Time | 0...127 (0 : -64, 64 : +0, 127 : +63) |

The value set here is an offset value which will be added to or subtracted from the Voice data.

### 1.2.14 Attack Time

Messages which adjust the envelope attack time set for each Voice.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 73 | Attack Time | 0...127 (0 : -64, 64 : +0, 127 : +63) |

The value set here is an offset value which will be added to or subtracted from the Voice data.

### 1.2.15 Brightness

Messages which adjust the filter cutoff frequency set for each Voice.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 74 | Brightness | 0...127 (0 : -64, 64 : +0, 127 : +63) |

The value set here is an offset value which will be added to or subtracted from the Voice data.
Lower values will result in a softer sound.
Depending on the Voice, the effective range may be narrower than the range available for adjustment.

### 1.2.16 Portamento Control

Messages which apply a portamento between the currently sounding note and the subsequent note.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 84 | Portamento Control | 0...127 |

Portamento Control is transmitted specifying the Note On Key of the currently-sounding note.
Specify a Portamento Source Key number between 0-127.
When a Portamento Control message is received, the currently sounding pitch will change with a Portamento Time of 0 to the next Key On key on the same channel.
For example, the following settings would apply a portamento from note C3 to C4.

| 90 | 3C | 7F | ............ C3 = Key On |
|---|---|---|---|
| B0 | 54 | 3C | ........... Source Key number set to C3 |
| 90 | 48 | 7F | ............ C4 = Key On (When C4 = on, C3 is raised by a portamento to C4.) |

Even if the Multi Part parameter Rcv PORTAMENTO (Table 1-4) = OFF, the Portamento Control message will be received.

### 1.2.17 Effect1 Depth (Reverb Send Level)

Messages which adjust the send level for the Reverb effect.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 91 | Effect1 Depth | 0...127 |

### 1.2.18 Effect3 Depth (Chorus Send Level)

Messages which adjust the send level for the Chorus effect.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 93 | Effect3 Depth | 0...127 |

### 1.2.19 Effect4 Depth (Variation Effect Send Level)

Messages which adjust the send level for the Variation effect.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 94 | Effect4 Depth | 0...127 |

If Variation Connection (Table 1-3) = 1 (System), this message sets the send level for the Variation effect. If Variation Connection = 0 (Insertion), this has no effect.

### 1.2.20 Data Increment / Decrement (for RPN)

Messages which increase or decrease the MSB value of Pitch Bend Sensitivity, Fine Tune, or Coarse Tune in steps of 1.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 96 | RPN Increment | 0...127 |
| 97 | RPN Decrement | 0...127 |

The data byte is ignored.
When the maximum value or minimum value is reached, the value will not be incremented or decremented further.
(Incrementing the Fine Tune will not cause the Coarse Tune to be incremented.)

### 1.2.21 NRPN (Non-Registered Parameter Number)

Messages which adjust a Voice's vibrato, filter, EG, drum setup or other parameter settings.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 98 | NRPN LSB | 0...127 |
| 99 | NRPN MSB | 0...127 |

First send the NRPN MSB and NRPN LSB to specify the parameter which is to be controlled. Then use Data Entry to set the value of the specified parameter.

\* *Note that once the NRPN has been set for a channel, subsequent data entry will be recognized as the same NRPN's value change. Therefore, after you use the NRPN, you should set a Null (7FH, 7FH) value to avoid an unexpected result.*

The following NRPN numbers can be received.

| NRPN MSB | LSB | DATA ENTRY MSB | PARAMETER NAME and VALUE RANGE |
|---|---|---|---|
| 01H | 08H | mmH | Vibrato Rate<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 01H | 09H | mmH | Vibrato Depth<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 01H | 0AH | mmH | Vibrato Delay<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 01H | 20H | mmH | Filter Cutoff Frequency<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 01H | 21H | mmH | Filter Resonance<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 01H | 63H | mmH | EG Attack Time<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 01H | 64H | mmH | EG Decay Time<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 01H | 66H | mmH | EG Release Time<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 14H | rrH | mmH | Drum Filter Cutoff Frequency<br>mm : 00H-40H-7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 15H | rrH | mmH | Drum Filter Resonance<br>mm : 00H-40H-7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 16H | rrH | mmH | Drum EG Attack Rate<br>mm : 00H-40H-7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 17H | rrH | mmH | Drum EG Decay Rate<br>mm : 00H-40H-7FH (-64 - 0 - +63)<br>rr : drum instrument note number<br>Applies to both Decay1 and 2. |
| 18H | rrH | mmH | Drum Instrument Pitch Coarse<br>mm : 00H-40H-7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 19H | rrH | mmH | Drum Instrument Pitch Fine<br>mm : 00H-40H-7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 1AH | rrH | mmH | Drum Instrument Level<br>mm : 00-7F (0-max)<br>rr : drum instrument note number |
| 1CH | rrH | mmH | Drum Instrument Pan<br>mm : 00H-40H-7FH<br>(random, left-center-right)<br>rr : drum instrument note number |
| 1DH | rrH | mmH | Drum Instrument Reverb Send Level<br>mm : 00H-7FH (0-max)<br>rr : drum instrument note number |
| 1EH | rrH | mmH | Drum Instrument Chorus Send Level<br>mm : 00H-7FH (0-max)<br>rr : drum instrument note number |
| 1FH | rrH | mmH | Drum Instrument Variation Send Level<br>mm : 00H-7FH (0-max)<br>rr : drum instrument note number |

MSB 14H-1FH (for Drum) is valid only if the Multi Part parameter (Table 1-4) PART MODE = DRUMS 1 or DRUMS2 for that channel. (If PART MODE = DRUM, no values will be changed.)

## 1.2.22 RPN (Registered Parameter Number)

Messages which offset, or add or subtract values from a Part's pitch bend sensitivity, tuning, or other parameter settings.

| CNTRL# | PARAMETER | DATA RANGE |
|---|---|---|
| 100 | RPN LSB | 0...127 (Default:7FH) |
| 101 | RPN MSB | 0...127 (Default:7FH) |

* *Note that once the RPN has been set for a channel, subsequent data entry will be recognized as the same RPN's value change. Therefore after you use the RPN, you should set a Null (7FH, 7FH) value to avoid an unexpected result.*

The following RPN numbers can be received.

| RPN MSB | LSB | DATA ENTRY MSB | LSB | PARAMETER NAME and VALUE RANGE |
|---|---|---|---|---|
| 00H | 00H | mmH | — | Pitch Bend Sensitivity<br>mm : 00-18H (0-24 chromatic steps)<br>Assignable in chromatic steps up to 2 octaves<br>Default : 02H<br>LSB value is ignored. |
| 00H | 01H | mmH | 11H | Fine Tuning<br>mm : 00H-40H-7FH (-64 - 0 - +63) |
| 00H | 02H | mmH | — | Coarse Tuning<br>mm : 28H-40H-58H (-24 - +24 chromatic steps)<br>LSB value is ignored. |
| 7FH | 7FH | — | — | RPN null<br>Cancels RPN and NRPN numbers. |

## 1.2.23 Channel Mode Messages

The following Channel Mode Messages can be received.

| 2nd BYTE | 3rd BYTE | MESSAGE |
|---|---|---|
| 120 | 0 | All Sounds Off |
| 121 | 0 | Reset All Controllers |
| 123 | 0 | All Notes Off |
| 124 | 0 | Omni Off |
| 125 | 0 | Omni On |
| 126 | 0 - 16 | Mono |
| 127 | 0 | Poly |

### 1.2.23.1 All Sounds Off

Terminates all sounds currently sounding on the specified channel. However, the status of channel messages such as Note On and Hold On is maintained.

### 1.2.23.2 Reset All Controllers

The values of the following controllers will be reset to the defaults.

| CONTROLLER | VALUE |
|---|---|
| Pitch Bend Change | ±0 (center) |
| Channel Aftertouch | 0 (off) |
| Polyphonic Aftertouch | 0 (off) |
| Modulation | 0 (off) |
| Expression | 127 (max) |

| | |
|---|---|
| Hold1 | 0 (off) |
| Portamento | 0 (off) |
| Sostenuto | 0 (off) |
| Soft Pedal | 0 (off) |
| Portamento Control | cancels the Portamento Source Key Number that was received. |
| RPN | number not specified; internal data will not change. |
| NRPN | number not specified; internal data will not change. |

### 1.2.23.3 All Notes Off

Terminates all notes currently on for the specified channel. However, if Hold1 or Sostenuto is on, notes will continue sounding until these are turned off.

### 1.2.23.4 Omni Off

Performs the same function as when an All Notes Off message is received.

### 1.2.23.5 Omni On

Performs the same function as when an All Notes Off message is received.

### 1.2.23.6 Mono

Performs the same function as when an All Sounds Off message is received, and if the 3rd byte (mono number) is in the range of 0-16, sets the corresponding channel to Mono Mode (Mode 4 : m = 1).

### 1.2.23.7 Poly

Performs the same function as when an All Sounds Off message is received, and sets the corresponding channel to Poly Mode (Mode 3).

### 1.3 Program Change

Messages for Voice selection.
With a combination of Bank Select, you can select not only basic Voice numbers, but also variation Voice bank numbers.
If the Multi Part parameter Rcv PROGRAM CHANGE (Table 1-4) = OFF, that Part will not receive Program Change messages.

### 1.4 Pitch Bend

Messages for pitch bend wheel values.
If the Multi Part parameter Rcv PITCH BEND CHANGE (Table 1-4) = OFF, that Part will not receive Pitch Bend messages.

### 1.5 Channel Aftertouch

Messages which let you control various functions by the pressure you apply to the keys after the initial striking of the keys, over the entire channel.

If the Multi Part parameter Rcv CHANNEL AFTER TOUCH (Table 1-4) = OFF, that Part will not receive Channel Aftertouch.

### 1.6 Polyphonic Aftertouch

Messages which let you control various functions by the pressure you apply to the keys after the initial striking of the keys, for each individual key.
If the Multi Part parameter Rcv POLYPHONIC AFTER TOUCH (Table 1-4) = OFF, that Part will not receive Polyphonic Aftertouch. Effective range is between note numbers 36-97.

## 2. SYSTEM EXCLUSIVE MESSAGES

System Exclusive messages control various functions of the MU10, including master volume and master tuning, play mode, effect type and various other parameters.

* *The device number of the MU10 is fixed to "All".*

### 2.1 Parameter Change

The MU10 receives the following parameter change messages.

[ UNIVERSAL REALTIME MESSAGE ]
  1) Master Volume

[ UNIVERSAL NON REALTIME MESSAGE ]
  1) General MIDI Mode On

[ XG NATIVE PARAMETER CHANGE ]
  1) XG System on
  2) XG System Data parameter change
  3) Multi Effect1 Data parameter change
  4) Multi Part Data parameter change
  5) A/D Part Data parameter change
  6) A/D System Data parameter change
  7) Drums Setup Data parameter change

[ MU10 NATIVE PARAMETER CHANGE ]
  1) MU10 System Data parameter change

[ OTHER ]
  1) Master tuning
  2) TG300 System Data parameter change
  3) TG300 Multi Effect Data parameter change
  4) TG300 Multi Part Data parameter change

### 2.1.2 Universal Realtime Messages
### 2.1.2.1 Master Volume

```
11110000   F0   Exclusive  status
01111111   7F   Universal  Real  Time
01111111   7F   ID of target device
00000100   04   Sub-ID #1=Device  Control
                Message
00000001   01   Sub-ID #2=Master  Volume
0sssssss   ss*  Volume  LSB
```

```
Ottttttt   tt   Volume MSB
11110111   F7   End of Exclusive
```
or,
```
11110000   F0   Exclusive status
01111111   7F   Universal Real Time
0xxxnnnn   xn   Device Number,
                xxx=irrelevant
00000100   04   Sub-ID #1=Device Control
                Message
00000001   01   Sub-ID #2=Master Volume
0sssssss   ss   Volume LSB
Ottttttt   tt   Volume MSB
11110111   F7   End of Exclusive
```

When received, the Volume MSB will be effective for the System Parameter MASTER VOLUME (Table 1-2).

* *"ss" is the hexadecimal expression of 0sssssss; same as for "tt", "aa", etc.*

### 2.1.3 Universal Non-Realtime Messages
### 2.1.3.1 General MIDI Mode On

```
11110000   F0   Exclusive status
01111110   7E   Universal Non-Real Time
01111111   7F   ID of target device
00001001   09   Sub-ID #1=General MIDI
                Message
00000001   01   Sub-ID #2=General MIDI On
11110111   F7   End of Exclusive
```
or,
```
11110000   F0   Exclusive status
01111110   7E   Universal Non-Real Time
0xxxnnnn   xn   Device Number, xxx =
                irrelevant
00001001   09   Sub-ID #1=General MIDI
                Message
00000001   01   Sub-ID #2=General MIDI On
11110111   F7   End of Exclusive
```

When General MIDI Mode On is received, the play mode will be changed to XG mode.
When this happens, the MU10 will receive the MIDI messages which compatible with GM System Level 1, and consequently will not receive NRPN and Bank Select messages.
Since approximately 50ms is required to execute this message, be sure to leave an appropriate interval before the subsequent message.

### 2.1.4 XG Native Parameter Change

With the Parameter Change messages as listed below, you can change the basic character or sound of a Voice, such as by Effect Type or effect parameter, transpose, tuning, and others.

```
11110000   F0   Exclusive status
01000011   43   YAMAHA ID
0001nnnn   1n*  Device Number
01001100   4C   XG Model ID
0aaaaaaa   aa   Address High
```

```
0aaaaaaa   aa   Address Mid
0aaaaaaa   aa   Address Low
0ddddddd   dd   Data
    |       |
11110111   F7   End of Exclusive
```

* *Any number is OK since the device number for the MU10 is fixed to "All".*
*For parameters with data size of 2 or 4, transmit the appropriate number of data bytes.*
*When sending the parameter change messages consecutively, be sure to leave an appropriate interval (if the time base is 480, ca 5 unit) between the messages.*

---

## EXAMPLE OF PARAMETER CHANGE

1. To change reverb effect type to Stage 1, first check the Effect Type List (page 38) to identify the MSB and LSB numbers; for Stage 1 Reverb effect type numbers are MSB = 03, LSB = 00.
Next, check the Address in Table 1-3 for the REVERB TYPE parameter; in this case the address is High, Mid, Low = 02, 01, 00, respectively.
Apply these to the 2.1.4 XG Native Parameter Change list as follows:

```
11110000   F0    Exclusive status
01000011   43    YAMAHA ID
0001nnnn   1n*   Device Number
01001100   4C    XG Model ID
00000010   02    Address High
00000001   01    Address Mid
00000000   00    Address Low
00000011   03    Data (REVERB TYPE MSB)
00000000   00    Data (REVERB TYPE LSB)
11110111   F7    End of Exclusive
```

When this data is received, the MU10 will change the effect type to Stage 1 Reverb.

* *Any number is OK since the device number for the MU10 is fixed to "All".*

2. To change the effect Dry/Wet balance of Stage 1 to 50% each, first check the Effect Parameter List (page 39), parameter number 10, to identify the Dry (50%)/Wet (50%); in this case the Dry=Wet value is 64 (hexadecimal 40).
Next, check the Address in Table 1-3 for the REVERB PARAMETER 10; in this case the address is High, Mid, Low = 02, 01, 0B, respectively.
Apply these to the 2.1.4 XG Native Parameter Change list as follows:

```
11110000    F0    Exclusive status
01000011    43    YAMAHA ID
0001nnnn    1n    Device Number
01001100    4C    XG Model ID
00000010    02    Address High
00000001    01    Address Mid
00001011    0B    Address Low
01000000    40    Data (MSB)
00000000    00    Data (LSB)→ fixed at
                   00.
11110111    F7    End of Exclusive
```

When this data is received, the MU10 will change the effect Dry/Wet balance of Stage 1 to 50% each.

Be sure to allow enough time for the procedure to take place by inserting an empty measure at the top of the song for every channel.

### 2.1.4.1 XG System On

```
11110000    F0    Exclusive status
01000011    43    YAMAHA ID
0001nnnn    1n    Device Number
01001100    4C    XG Model ID
00000000    00    Address High
00000000    00    Address Mid
01111110    7E    Address Low
00000000    00    Data
11110111    F7    End of Exclusive
```

When this data is received, the MU10 will switch to XG mode and all the parameters will be initialized accordingly, and XG-compatible messages such as NRPN and Bank Select messages can be received. However, A/D part parameter settings except Variation Send value will be preserved (Variation Send will be initialized to the value of 0).
Since approximately 50ms is required to execute this message, be sure to leave an appropriate interval before the subsequent message.

## PERFORMANCE MODE CHANGE
## (XG mode / TG300B mode)

```
XG System On = F0 43 1n 4c 00 00 7E 00 F7
TG300B Reset = F0 41 1n 42 12 40 00 7F 00
               41 F7

               n = device number
```

### 2.1.4.2 XG System Data parameter change
See Tables 1-1 and 1-2.

### 2.1.4.3 Multi Effect1 Data parameter change
See Tables 1-1 and 1-3.

### 2.1.4.4 Multi Part Data parameter change
See Tables 1-1 and 1-4.

### 2.1.4.5 A/D Part Data parameter change
See Tables 1-1 and 1-5.

### 2.1.4.6 Drums Setup Data parameter change
See Tables 1-1 and 1-6.

If a Drum Setup Reset parameter change message (Table 1-2) is received, the Drum Setup parameter values will be initialized. Selecting a Drum Set will cause the Drum Setup parameter values to be initialized.

### 2.1.5 MU10 Native Parameter Change

```
11110000    F0    Exclusive status
01000011    43    YAMAHA ID
0001nnnn    1n    Device Number
01001001    49    Model ID
0aaaaaaa    aa    Address High
0aaaaaaa    aa    Address Mid
0aaaaaaa    aa    Address Low
0ddddddd    dd    Data
    |        |
11110111    F7    End of Exclusive
```

### 2.1.5.1 MU10 System Data parameter change
See Tables 2-1 and 2-2.

### 2.1.6 Other parameter changes
### 2.1.6.1 Master Tuning

```
11110000    F0    Exclusive status
01000011    43    YAMAHA ID
0001nnnn    1n    Device Number
00100111    27    Model ID
00110000    30    Sub ID2
00000000    00
00000000    00
0mmmmmmm    mm    Master Tune MSB
01111111    11    Master Tune LSB
0ccccccc    cc    irrelevant
11110111    F7    End of Exclusive
```

This message simultaneously changes the pitch of all channels.

### 2.2 Bulk Dump
The MU10 receives the following bulk dump data.

**[ XG NATIVE ]**
1) XG System Data
2) Multi Effect1 Data
3) Multi Part Data
4) A/D Part Data
5) Drums Setup Data

[ QS300 NATIVE ]
1) QS300 User Normal Voice Data

### 2.2.1 XG Native Bulk Dump

```
11110000    F0    Exclusive  status
01000011    43    YAMAHA  ID
0000nnnn    0n    Device  Number
01001100    4C    XG Model  ID
0bbbbbbb    bb    Byte  Count
0bbbbbbb    bb    Byte  Count
0aaaaaaa    aa    Address  High
0aaaaaaa    aa    Address  Mid
0aaaaaaa    aa    Address  Low
0ddddddd    dd    Data
   |         |
   |         |
0ccccccc    cc    checksum
11110111    F7    End  of  Exclusive
```

For the Address and Byte Count, refer to the supplementary tables.
The checksum is the value that results in a value of 0 for the lower 7 bits when the Start Address, Byte Count, plus the checksum itself are added.

#### 2.2.1.1 XG System Data bulk dump
See Tables 1-1 and 1-2.

#### 2.2.1.2 Multi Effect1 Data bulk dump
See Tables 1-1 and 1-3.

#### 2.2.1.3 Multi Part Data bulk dump
See Tables 1-1 and 1-4.

#### 2.2.1.4 A/D Part Data bulk dump
See Tables 1-1 and 1- 5

#### 2.2.1.5 Drums Setup Data bulk dump
See Tables 1-1 and 1-6.

### 2.2.2 QS300 Native Bulk Dump
Up to 32 Voices created by the QS300 can be saved in the MU10's User Memory by bulk dump messages. (Effective only when the XG mode is active.)
QS300 User Voices are stored in Bank MSB = 63, LSB = 00. Program Change numbers for User Voices are 1-32.

```
11110000    F0    Exclusive  status
01000011    43    YAMAHA  ID
0000nnnn    0n    Device  Number
01001011    4B    QS300 Model  ID
0bbbbbbb    bb    Byte  Count
0bbbbbbb    bb    Byte  Count
0aaaaaaa    aa   'Address  High
0aaaaaaa    aa    Address  Mid
0aaaaaaa    aa    Address  Low
```

```
0ddddddd    dd    Data
   |         |
   |         |
0ccccccc    cc    checksum
11110111    F7    End  of  Exclusive
```

* *Because of possible differences in number of elements, some QS300 Voices may sound slightly different.*

#### 2.2.2.1 QS300 User Normal Voice Data bulk dump
See Tables 3-1 and 3-2.

## 3. REALTIME MESSAGES
### 3.1 Active Sensing
Once FE has been received, if no MIDI data is subsequently received for longer than an interval of approximately 300msec, the MU10 will perform the same function as when ALL SOUNDS OFF, ALL NOTES OFF, and RESET ALL CONTROLLERS messages are received, and will then return to a status in which FE is not monitored.

## ■ TRANSMISSION

When the HOST SELECT switch is set to other than "MIDI", data received via TO HOST terminal is relayed to MIDI OUT terminal.
If the data received via TO HOST terminal includes port message, the only data with the port message specified in MULTI PORT NUMBER for MIDI OUT ( Table 2-2 ) is relayed to MIDI OUT terminal.

# ■ MIDI Data Tables

## ● Table 1-1

Parameter Base Address
Model ID = 4C [XG]

| Parameter Change | | | | |
|---|---|---|---|---|
| | Address | | | Description |
| | High | Mid | Low | |
| XG SYSTEM | 00 | 00 | 00 | System |
| | 00 | 00 | 7D | Drum setup Reset |
| | 00 | 00 | 7E | XG System On |
| | 00 | 00 | 7F | All Parameter Reset |
| EFFECT 1 | 02 | 01 | 00 | Effect1(Reverb,Chorus,Variation ) |
| MULTI PART | 08 | 00 | 00 | Multi Part 1 |
| | : | : | | : |
| | 08 | 0F | 00 | Multi Part 16 |
| A/D PART | 10 | 00 | 00 | A/D Part |
| A/D SYSTEM | 11 | 00 | 00 | |
| DRUM | 30 | 0D | 00 | Drum Setup 1 |
| | 31 | 0D | 00 | Drum Setup 2 |

| Address | | | Parameter |
|---|---|---|---|
| 3n | 0D | 00 | note number 13 |
| 3n | 0E | 00 | note number 14 |
| : | | : | : |
| 3n | 5B | 00 | note number 91 |

n : Drum Setup number (0, 1)

## ● Table 1-2

MIDI Parameter Change Table ( SYSTEM ) [XG]

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| 00 | 00 | 00 | 4 | 0000-07FF | MASTER TUNE | -102.4 - +102.3[cent] | 00 04 00 00 |
| | | | | | | 1st bit 3-0 → bit 15-12 | |
| | | | | | | 2nd bit 3-0 → bit 11-8 | |
| | | | | | | 3rd bit 3-0 → bit 7-4 | |
| | | | | | | 4th bit 3-0 → bit 3-0 | |
| | | 04 | 1 | 00-7F | MASTER VOLUME | 0-127 | 7F |
| | | 05 | 1 | | NOT USED | | |
| | | 06 | 1 | 28-58 | TRANSPOSE | -24 - +24 [semitones] | 40 |
| | | 7D | | n | DRUM SETUP RESET | n=Drum Setup number (0, 1) | |
| | | 7E | | 00 | XG SYSTEM ON | 00=XG System ON (receive only) | |
| | | 7F | | 00 | ALL PARAMETER RESET | 00=ON (receive only) | |
| TOTAL SIZE | | | 07 | | | | |

## ● Table 1-3

MIDI Parameter Change Table ( EFFECT 1 ) [XG]

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| 02 | 01 | 00 | 2 | 00-7F | REVERB TYPE MSB | → *1 | 01 (=HALL1) |
| | | | | 00-7F | REVERB TYPE LSB | 00 : basic type | 00 |
| | | 02 | 1 | 00-7F | REVERB PARAMETER 1 | → *2 | depends on reverb type |
| | | 03 | 1 | 00-7F | REVERB PARAMETER 2 | → *2 | depends on reverb type |
| | | 04 | 1 | 00-7F | REVERB PARAMETER 3 | → *2 | depends on reverb type |
| | | 05 | 1 | 00-7F | REVERB PARAMETER 4 | → *2 | depends on reverb type |
| | | 06 | 1 | 00-7F | REVERB PARAMETER 5 | → *2 | depends on reverb type |
| | | 07 | 1 | 00-7F | REVERB PARAMETER 6 | → *2 | depends on reverb type |
| | | 08 | 1 | 00-7F | REVERB PARAMETER 7 | → *2 | depends on reverb type |
| | | 09 | 1 | 00-7F | REVERB PARAMETER 8 | → *2 | depends on reverb type |
| | | 0A | 1 | 00-7F | REVERB PARAMETER 9 | → *2 | depends on reverb type |
| | | 0B | 1 | 00-7F | REVERB PARAMETER 10 | → *2 | depends on reverb type |
| | | 0C | 1 | 00-7F | REVERB RETURN | -Infinity...0dB...+6dB (0...64...127) | 40 |
| | | 0D | 1 | 01-7F | REVERB PAN | L63...C...R63 (1...64...127) | 40 |
| TOTAL SIZE | | | 0E | | | | |
| 02 | 01 | 10 | 1 | 00-7F | REVERB PARAMETER 11 | → *2 | depends on reverb type |
| | | 11 | 1 | 00-7F | REVERB PARAMETER 12 | → *2 | depends on reverb type |
| | | 12 | 1 | 00-7F | REVERB PARAMETER 13 | → *2 | depends on reverb type |
| | | 13 | 1 | 00-7F | REVERB PARAMETER 14 | → *2 | depends on reverb type |
| | | 14 | 1 | 00-7F | REVERB PARAMETER 15 | → *2 | depends on reverb type |
| | | 15 | 1 | 00-7F | REVERB PARAMETER 16 | → *2 | depends on reverb type |
| TOTAL SIZE | | | 6 | | | | |

→ *1 : See Effect Type List (on page 38)
→ *2 : See Effect Parameter List (on page 39)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| 02 | 01 | 20 | 2 | 00-7F | CHORUS TYPE MSB | → *1 | 41 (=CHORUS1) |
| | | | | 00-7F | CHORUS TYPE LSB | 00 : basic type | 00 |
| | | 22 | 1 | 00-7F | CHORUS PARAMETER 1 | → *2 | depends on chorus type |
| | | 23 | 1 | 00-7F | CHORUS PARAMETER 2 | → *2 | depends on chorus type |
| | | 24 | 1 | 00-7F | CHORUS PARAMETER 3 | → *2 | depends on chorus type |
| | | 25 | 1 | 00-7F | CHORUS PARAMETER 4 | → *2 | depends on chorus type |
| | | 26 | 1 | 00-7F | CHORUS PARAMETER 5 | → *2 | depends on chorus type |
| | | 27 | 1 | 00-7F | CHORUS PARAMETER 6 | → *2 | depends on chorus type |
| | | 28 | 1 | 00-7F | CHORUS PARAMETER 7 | → *2 | depends on chorus type |
| | | 29 | 1 | 00-7F | CHORUS PARAMETER 8 | → *2 | depends on chorus type |
| | | 2A | 1 | 00-7F | CHORUS PARAMETER 9 | → *2 | depends on chorus type |
| | | 2B | 1 | 00-7F | CHORUS PARAMETER 10 | → *2 | depends on chorus type |
| | | 2C | 1 | 00-7F | CHORUS RETURN | -Infinity...0dB...+6dB (0...64...127) | 40 |
| | | 2D | 1 | 01-7F | CHORUS PAN | L63...C...R63 (1...64...127) | 40 |
| | | 2E | 1 | 00-7F | SEND CHORUS TO REVERB | -Infinity...0dB...+6dB (0...64...127) | 00 |
| TOTAL SIZE | | | 0F | | | | |
| | | | | | | | |
| 02 | 01 | 30 | 1 | 00-7F | CHORUS PARAMETER 11 | → *2 | depends on chorus type |
| | | 31 | 1 | 00-7F | CHORUS PARAMETER 12 | → *2 | depends on chorus type |
| | | 32 | 1 | 00-7F | CHORUS PARAMETER 13 | → *2 | depends on chorus type |
| | | 33 | 1 | 00-7F | CHORUS PARAMETER 14 | → *2 | depends on chorus type |
| | | 34 | 1 | 00-7F | CHORUS PARAMETER 15 | → *2 | depends on chorus type |
| | | 35 | 1 | 00-7F | CHORUS PARAMETER 16 | → *2 | depends on chorus type |
| TOTAL SIZE | | | 6 | | | | |
| | | | | | | | |
| 02 | 01 | 40 | 2 | 00-7F | VARIATION TYPE MSB | → *1 | 05 (=DELAY L,C,R) |
| | | | | 00-7F | VARIATION TYPE LSB | 00 : basic type | 00 |
| | | 42 | 2 | 00-7F | VARIATION PARAMETER 1 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 1 LSB | → *2 | depends on variation type |
| | | 44 | 2 | 00-7F | VARIATION PARAMETER 2 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 2 LSB | → *2 | depends on variation type |
| | | 46 | 2 | 00-7F | VARIATION PARAMETER 3 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 3 LSB | → *2 | depends on variation type |
| | | 48 | 2 | 00-7F | VARIATION PARAMETER 4 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 4 LSB | → *2 | depends on variation type |
| | | 4A | 2 | 00-7F | VARIATION PARAMETER 5 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 5 LSB | → *2 | depends on variation type |
| | | 4C | 2 | 00-7F | VARIATION PARAMETER 6 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 6 LSB | → *2 | depends on variation type |
| | | 4E | 2 | 00-7F | VARIATION PARAMETER 7 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 7 LSB | → *2 | depends on variation type |
| | | 50 | 2 | 00-7F | VARIATION PARAMETER 8 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 8 LSB | → *2 | depends on variation type |
| | | 52 | 2 | 00-7F | VARIATION PARAMETER 9 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 9 LSB | → *2 | depends on variation type |
| | | 54 | 2 | 00-7F | VARIATION PARAMETER 10 MSB | → *2 | depends on variation type |
| | | | | 00-7F | VARIATION PARAMETER 10 LSB | → *2 | depends on variation type |
| | | 56 | 1 | 00-7F | VARIATION RETURN | -Infinity...0dB...+6dB (0...64...127) | 40 |
| | | 57 | 1 | 01-7F | VARIATION PAN | L63...C...R63 (1...64...127) | 40 |
| | | 58 | 1 | 00-7F | SEND VARIATION TO REVERB | -Infinity...0dB...+6dB (0...64...127) | 00 |
| | | 59 | 1 | 00-7F | SEND VARIATION TO CHORUS | -Infinity...0dB...+6dB (0...64...127) | 00 |
| | | 5A | 1 | 00-01 | VARIATION CONNECTION | 0:INSERTION, 1:SYSTEM | 00 |
| | | 5B | 1 | 00-0F, | VARIATION PART | part 1...16=0...15 | 7F |
| | | | | 40,7F | | A/D part =64, OFF=127 | |
| | | 5C | 1 | 00-7F | MW VARIATION CONTROL DEPTH | -64 - +63 | 40 |
| | | 5D | 1 | 00-7F | BEND VARIATION CONTROL DEPTH | -64 - +63 | 40 |
| | | 5E | 1 | 00-7F | CAT VARIATION CONTROL DEPTH | -64 - +63 | 40 |
| | | 5F | 1 | 00-7F | AC1 VARIATION CONTROL DEPTH | -64 - +63 | 40 |
| | | 60 | 1 | 00-7F | AC2 VARIATION CONTROL DEPTH | -64 - +63 | 40 |
| TOTAL SIZE | | | 21 | | | | |

→ *1 : See Effect Type List (on page 38)
→ *2 : See Effect Parameter List (on page 39)

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| 02 | 01 | 70 | 1 | 00-7F | VARIATIONPARAMETER 11 | → *2 | depends on variation type |
| | | 71 | 1 | 00-7F | VARIATION PARAMETER 12 | → *2 | depends on variation type |
| | | 72 | 1 | 00-7F | VARIATION PARAMETER 13 | → *2 | depends on variation type |
| | | 73 | 1 | 00-7F | VARIATION PARAMETER 14 | → *2 | depends on variation type |
| | | 74 | 1 | 00-7F | VARIATION PARAMETER 15 | → *2 | depends on variation type |
| | | 75 | 1 | 00-7F | VARIATION PARAMETER 16 | → *2 | depends on variation type |
| TOTAL SIZE | | | 6 | | | | |

→ *1 : See Effect Type List (on page 38)
→ *2 : See Effect Parameter List (on page 39)

## ● Table 1-4
### MIDI Parameter Change Table ( MULTI PART ) [XG]

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| 08 | nn | 00 | 1 | 00-20 | ELEMENT RESERVE | 0-32 | part10=00, other=02 |
| | nn | 01 | 1 | 00-7F | BANK SELECT MSB | 0-127 | part10=7F, other=00 |
| | nn | 02 | 1 | 00-7F | BANK SELECT LSB | 0-127 | 00 |
| | nn | 03 | 1 | 00-7F | PROGRAM NUMBER | 1-128 | 00 |
| | nn | 04 | 1 | 00-0F,7F | Rcv CHANNEL | 1-16,OFF | part no. |
| | nn | 05 | 1 | 00-01 | MONO/POLY MODE | 0:MONO, 1:POLY | 01 |
| | nn | 06 | 1 | 00-02 | SAME NOTE NUMBER KEY ON ASSIGN | 0:SINGLE 1:MULTI 2:INST (for DRUM) | 01 |
| | nn | 07 | 1 | 00-03 | PART MODE | 0:NORMAL 1:DRUM 2-3:DRUMS1-2 | 00(Other than Part10) 02(Part10) |
| | nn | 08 | 1 | 28-58 | NOTE SHIFT | -24 - +24 [semitones] | 40 |
| | nn | 09 | 2 | 00-FF | DETUNE | -12.8 - +12.7 [Hz] | 08  00 |
| | nn | 0A | | | | 1st bit 3-0 → bit 7-4 2nd bit 3-0 → bit 3-0 | (80) |
| | nn | 0B | 1 | 00-7F | VOLUME | 0-127 | 64 |
| | nn | 0C | 1 | 00-7F | VELOCITY SENSE DEPTH | 0-127 | 40 |
| | nn | 0D | 1 | 00-7F | VELOCITY SENSE OFFSET | 0-127 | 40 |
| | nn | 0E | 1 | 00-7F | PAN | 0:random, L63...C...R63 (1...64...127) | 40 |
| | nn | 0F | 1 | 00-7F | NOTE LIMIT LOW | C-2-G8 | 00 |
| | nn | 10 | 1 | 00-7F | NOTE LIMIT HIGH | C-2-G8 | 7F |
| | nn | 11 | 1 | 00-7F | DRY LEVEL | 0-127 | 7F |
| | nn | 12 | 1 | 00-7F | CHORUS SEND | 0-127 | 00 |
| | nn | 13 | 1 | 00-7F | REVERB SEND | 0-127 | 28 |
| | nn | 14 | 1 | 00-7F | VARIATION SEND | 0-127 | 00 |
| | nn | 15 | 1 | 00-7F | VIBRATO RATE | -64 - +63 | 40 |
| | nn | 16 | 1 | 00-7F | VIBRATO DEPTH | -64 - +63 | 40 (drum part ignores) |
| | nn | 17 | 1 | 00-7F | VIBRATO DELAY | -64 - +63 | 40 (drum part ignores) |
| | nn | 18 | 1 | 00-7F | FILTER CUTOFF FREQUENCY | -64 - +63 | 40 |
| | nn | 19 | 1 | 00-7F | FILTER RESONANCE | -64 - +63 | 40 |
| | nn | 1A | 1 | 00-7F | EG ATTACK TIME | -64 - +63 | 40 |
| | nn | 1B | 1 | 00-7F | EG DECAY TIME | -64 - +63 | 40 |
| | nn | 1C | 1 | 00-7F | EG RELEASE TIME | -64 - +63 | 40 |
| | nn | 1D | 1 | 28-58 | MW PITCH CONTROL | -24 - +24 [semitones] | 40 |
| | nn | 1E | 1 | 00-7F | MW FILTER CONTROL | -9600 - +9450 [cent] | 40 |
| | nn | 1F | 1 | 00-7F | MW AMPLITUDE CONTROL | -64 - +63 | 40 |
| | nn | 20 | 1 | 00-7F | MW LFO PMOD DEPTH | 0-127 | 0A |
| | nn | 21 | 1 | 00-7F | MW LFO FMOD DEPTH | 0-127 | 00 |
| | nn | 22 | 1 | 00-7F | MW LFO AMOD DEPTH | 0-127 | 00 |
| | nn | 23 | 1 | 28-58 | BEND PITCH CONTROL | -24 - +24 [semitones] | 42 |
| | nn | 24 | 1 | 00-7F | BEND FILTER CONTROL | -9600 - +9450 [cent] | 40 |
| | nn | 25 | 1 | 00-7F | BEND AMPLITUDE CONTROL | -64 - +63 | 40 |
| | nn | 26 | 1 | 00-7F | BEND LFO PMOD DEPTH | +100 - +100 [%] | 40 |
| | nn | 27 | 1 | 00-7F | BEND LFO FMOD DEPTH | +100 - +100 [%] | 40 |
| | nn | 28 | 1 | 00-7F | BEND LFO AMOD DEPTH | +100 - +100 [%] | 40 |
| TOTAL SIZE | | | 29 | | | | |

| Address (H) | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|
| nn | 30 | 1 | 00-01 | Rcv PITCH BEND | 0:OFF, 1:ON | 01 |
| nn | 31 | 1 | 00-01 | Rcv CH AFTER TOUCH (CAT) | 0:OFF, 1:ON | 01 |
| nn | 32 | 1 | 00-01 | Rcv PROGRAM CHANGE | 0:OFF, 1:ON | 01 |
| nn | 33 | 1 | 00-01 | Rcv CONTROL CHANGE | 0:OFF, 1:ON | 01 |
| nn | 34 | 1 | 00-01 | Rcv POLY AFTER TOUCH (PAT) | 0:OFF, 1:ON | 01 |
| nn | 35 | 1 | 00-01 | Rcv NOTE MESSAGE | 0:OFF, 1:ON | 01 |
| nn | 36 | 1 | 00-01 | Rcv RPN | 0:OFF, 1:ON | 01 |
| nn | 37 | 1 | 00-01 | Rcv NRPN | 0:OFF, 1:ON | XG=01, GM=00 |
| nn | 38 | 1 | 00-01 | Rcv MODULATION | 0:OFF, 1:ON | 01 |
| nn | 39 | 1 | 00-01 | Rcv VOLUME | 0:OFF, 1:ON | 01 |
| nn | 3A | 1 | 00-01 | Rcv PAN | 0:OFF, 1:ON | 01 |
| nn | 3B | 1 | 00-01 | Rcv EXPRESSION | 0:OFF, 1:ON | 01 |
| nn | 3C | 1 | 00-01 | Rcv HOLD1 | 0:OFF, 1:ON | 01 |
| nn | 3D | 1 | 00-01 | Rcv PORTAMENTO | 0:OFF, 1:ON | 01 |
| nn | 3E | 1 | 00-01 | Rcv SOSTENUTO | 0:OFF, 1:ON | 01 |
| nn | 3F | 1 | 00-01 | Rcv SOFT PEDAL | 0:OFF, 1:ON | 01 |
| nn | 40 | 1 | 00-01 | Rcv BANK SELECT | 0:OFF, 1:ON | XG=01, GM=00 |
| | | | | | | |
| nn | 41 | 1 | 00-7F | SCALE TUNING C | -64 - +63 [cent] | 40 |
| nn | 42 | 1 | 00-7F | SCALE TUNING C# | -64 - +63 [cent] | 40 |
| nn | 43 | 1 | 00-7F | SCALE TUNING D | -64 - +63 [cent] | 40 |
| nn | 44 | 1 | 00-7F | SCALE TUNING D# | -64 - +63 [cent] | 40 |
| nn | 45 | 1 | 00-7F | SCALE TUNING E | -64 - +63 [cent] | 40 |
| nn | 46 | 1 | 00-7F | SCALE TUNING F | -64 - +63 [cent] | 40 |
| nn | 47 | 1 | 00-7F | SCALE TUNING F# | -64 - +63 [cent] | 40 |
| nn | 48 | 1 | 00-7F | SCALE TUNING G | -64 - +63 [cent] | 40 |
| nn | 49 | 1 | 00-7F | SCALE TUNING G# | -64 - +63 [cent] | 40 |
| nn | 4A | 1 | 00-7F | SCALE TUNING A | -64 - +63 [cent] | 40 |
| nn | 4B | 1 | 00-7F | SCALE TUNING A# | -64 - +63 [cent] | 40 |
| nn | 4C | 1 | 00-7F | SCALE TUNING B | -64 - +63 [cent] | 40 |
| | | | | | | |
| nn | 4D | 1 | 28-58 | CAT PITCH CONTROL | -24 - +24 [semitones] | 40 |
| nn | 4E | 1 | 00-7F | CAT FILTER CONTROL | -9600 - +9450 [cent] | 40 |
| nn | 4F | 1 | 00-7F | CAT AMPLITUDE CONTROL | -64 - +63 | 40 |
| nn | 50 | 1 | 00-7F | CAT LFO PMOD DEPTH | 0-127 | 00 |
| nn | 51 | 1 | 00-7F | CAT LFO FMOD DEPTH | 0-127 | 00 |
| nn | 52 | 1 | 00-7F | CAT LFO AMOD DEPTH | 0-127 | 00 |
| | | | | | | |
| nn | 53 | 1 | 28-58 | PAT PITCH CONTROL | -24 - +24 [semitones] | 40 |
| nn | 54 | 1 | 00-7F | PAT FILTER CONTROL | -9600 - +9450 [cent] | 40 |
| nn | 55 | 1 | 00-7F | PAT AMPLITUDE CONTROL | -64 - +63 | 40 |
| nn | 56 | 1 | 00-7F | PAT LFO PMOD DEPTH | 0-127 | 00 |
| nn | 57 | 1 | 00-7F | PAT LFO FMOD DEPTH | 0-127 | 00 |
| nn | 58 | 1 | 00-7F | PAT LFO AMOD DEPTH | 0-127 | 00 |
| | | | | | | |
| nn | 59 | 1 | 00-5F | AC1 CONTROLLER NUMBER | 0-95 | 10 |
| nn | 5A | 1 | 28-58 | AC1 PITCH CONTROL | -24 - +24 [semitones] | 40 |
| nn | 5B | 1 | 00-7F | AC1 FILTER CONTROL | -9600 - +9450 [cent] | 40 |
| nn | 5C | 1 | 00-7F | AC1 AMPLITUDE CONTROL | -64 - +63 | 40 |
| nn | 5D | 1 | 00-7F | AC1 LFO PMOD DEPTH | 0-127 | 00 |
| nn | 5E | 1 | 00-7F | AC1 LFO FMOD DEPTH | 0-127 | 00 |
| nn | 5F | 1 | 00-7F | AC1 LFO AMOD DEPTH | 0-127 | 00 |
| | | | | | | |
| nn | 60 | 1 | 00-5F | AC2 CONTROLLER NUMBER | 0-95 | 11 |
| nn | 61 | 1 | 28-58 | AC2 PITCH CONTROL | -24 - +24 [semitones] | 40 |
| nn | 62 | 1 | 00-7F | AC2 FILTER CONTROL | -9600 - +9450 [cent] | 40 |
| nn | 63 | 1 | 00-7F | AC2 AMPLITUDE CONTROL | -64 - +63 | 40 |
| nn | 64 | 1 | 00-7F | AC2 LFO PMOD DEPTH | 0-127 | 00 |
| nn | 65 | 1 | 00-7F | AC2 LFO FMOD DEPTH | 0-127 | 00 |
| nn | 66 | 1 | 00-7F | AC2 LFO AMOD DEPTH | 0-127 | 00 |
| | | | | | | |
| nn | 67 | 1 | 00-01 | PORTAMENTO SWITCH | 0:OFF, 1:ON | 00 |
| nn | 68 | 1 | 00-7F | PORTAMENTO TIME | 0-127 | 00 |

| Address (H) | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|
| nn | 69 | 1 | 00-7F | PITCH EG INITIAL LEVEL | -64 - +63 | 40 |
| nn | 6A | 1 | 00-7F | PITCH EG ATTACK TIME | -64 - +63 | 40 |
| nn | 6B | 1 | 00-7F | PITCH EG RELEASE LEVEL | -64 - +63 | 40 |
| nn | 6C | 1 | 00-7F | PITCH EG RELEASE TIME | -64 - +63 | 40 |
| nn | 6D | 1 | 01-7F | VELOCITY LIMIT LOW | 1-127 | 01 |
| nn | 6E | 1 | 01-7F | VELOCITY LIMIT HIGH | 1-127 | 7F |
| TOTAL SIZE | | 3F | | | | |

nn = Part Number (0 : Part 1, 1 : Part 2, 2 : Part 3, ... , 15 : Part 16)
For the DRUM PART, the following parameters have no effect.
* SOFT PEDAL     * BANK SELECT LSB     * MONO/POLY     * SCALE TUNING     * PORTAMENTO
* POLY AFTER TOUCH     * PITCH EG INITIAL LEVEL     * PITCH EG ATTACK TIME     * PITCH EG RELEASE LEVEL     * PITCH EG RELEASE TIME

## ● Table 1-5
MIDI Parameter Change Table ( A/D PART ) [XG]

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| 10 | 00 | 00 | 1 | | INPUT GAIN | 0:MIC, 1:LINE | 00 |
| | 00 | 01 | 1 | 00-7F | BANK SELECT MSB | 0-127 | 00 |
| | 00 | 02 | 1 | 00-7F | BANK SELECT LSB | 0-127 | 00 |
| | 00 | 03 | 1 | 00-7F | PROGRAM NUMBER | 1-128 | 02 |
| | 00 | 04 | 1 | 00-0F,7F | Rcv CHANNEL | 1-16,OFF | 7F |
| | 00 | 05 | 1 | | NOT USED | | |
| | 00 | 06 | 1 | | NOT USED | | |
| | 00 | 07 | 1 | | NOT USED | | |
| | 00 | 08 | 1 | | NOT USED | | |
| | 00 | 09 | 1 | | NOT USED | | |
| | 00 | 0A | 1 | | NOT USED | | |
| | 00 | 0B | 1 | 00-7F | VOLUME | 0-127 | 64 |
| | 00 | 0C | 1 | | NOT USED | | |
| | 00 | 0D | 1 | | NOT USED | | |
| | 00 | 0E | 1 | 01-7F | PAN | L63...C...R63 (1...64...127) | 40 |
| | 00 | 0F | 1 | | NOT USED | | |
| | 00 | 10 | 1 | | NOT USED | | |
| | 00 | 11 | 1 | 00-7F | DRY LEVEL | 0-127 | 7F |
| | 00 | 12 | 1 | 00-7F | CHORUS SEND | 0-127 | 00 |
| | 00 | 13 | 1 | 00-7F | REVERB SEND | 0-127 | 28 |
| | 00 | 14 | 1 | 00-7F | VARIATION SEND | 0-127 | 00 |
| TOTAL SIZE | | | 15 | | | | |
| 10 | 00 | 30 | 1 | | NOT USED | | |
| | 00 | 31 | 1 | | NOT USED | | |
| | 00 | 32 | 1 | 00-01 | Rcv PROGRAM CHANGE | 0:OFF, 1:ON | 00 |
| | 00 | 33 | 1 | 00-01 | Rcv CONTROL CHANGE | 0:OFF, 1:ON | 01 |
| | 00 | 34 | 1 | | NOT USED | | |
| | 00 | 35 | 1 | | NOT USED | | |
| | 00 | 36 | 1 | | NOT USED | | |
| | 00 | 37 | 1 | | NOT USED | | |
| | 00 | 38 | 1 | | NOT USED | | |
| | 00 | 39 | 1 | 00-01 | Rcv VOLUME | 0:OFF, 1:ON | 01 |
| | 00 | 3A | 1 | 00-01 | Rcv PAN | 0:OFF, 1:ON | 01 |
| | 00 | 3B | 1 | 00-01 | Rcv EXPRESSION | 0:OFF, 1:ON | 01 |
| | 00 | 3C | 1 | | NOT USED | | |
| | 00 | 3D | 1 | | NOT USED | | |
| | 00 | 3E | 1 | | NOT USED | | |
| | 00 | 3F | 1 | | NOT USED | | |
| | 00 | 40 | 1 | 00-01 | Rcv BANK SELECT | 0:OFF, 1:ON | 00 |
| | 00 | 41 | 1 | | NOT USED | | |
| | 00 | 42 | 1 | | NOT USED | | |
| | 00 | 43 | 1 | | NOT USED | | |
| | 00 | 44 | 1 | | NOT USED | | |
| | 00 | 45 | 1 | | NOT USED | | |
| | 00 | 46 | 1 | | NOT USED | | |
| | 00 | 47 | 1 | | NOT USED | | |

| Address (H) | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|
| 00 | 48 | 1 | | NOT USED | | |
| 00 | 49 | 1 | | NOT USED | | |
| 00 | 4A | 1 | | NOT USED | | |
| 00 | 4B | 1 | | NOT USED | | |
| 00 | 4C | 1 | | NOT USED | | |
| 00 | 4D | 1 | | NOT USED | | |
| 00 | 4E | 1 | | NOT USED | | |
| 00 | 4F | 1 | | NOT USED | | |
| 00 | 50 | 1 | | NOT USED | | |
| 00 | 51 | 1 | | NOT USED | | |
| 00 | 52 | 1 | | NOT USED | | |
| 00 | 53 | 1 | | NOT USED | | |
| 00 | 54 | 1 | | NOT USED | | |
| 00 | 55 | 1 | | NOT USED | | |
| 00 | 56 | 1 | | NOT USED | | |
| 00 | 57 | 1 | | NOT USED | | |
| 00 | 58 | 1 | | NOT USED | | |
| 00 | 59 | 1 | 00-5F | AC1 CONTROLLER NUMBER | 0-95 | 10 |
| 00 | 5A | 1 | | NOT USED | | |
| 00 | 5B | 1 | | NOT USED | | |
| 00 | 5C | 1 | | NOT USED | | |
| 00 | 5D | 1 | | NOT USED | | |
| 00 | 5E | 1 | | NOT USED | | |
| 00 | 5F | 1 | | NOT USED | | |
| 00 | 60 | 1 | 00-5F | AC2 CONTROLLER NUMBER | 0-95 | 11 |
| TOTAL SIZE | | 31 | | | | |

## ● Table 1-6
MIDI Parameter Change Table ( DRUM SETUP ) [XG]

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| 3n | rr | 00 | 1 | 00-7F | PITCH COARSE | -64 - +63 | 40 |
| 3n | rr | 01 | 1 | 00-7F | PITCH FINE | -64 - +63[cent] | 40 |
| 3n | rr | 02 | 1 | 00-7F | LEVEL | 0-127 | depend on the note |
| 3n | rr | 03 | 1 | 00-7F | ALTERNATE GROUP | 0:OFF, 1-127 | depend on the note |
| 3n | rr | 04 | 1 | 00-7F | PAN | 0:random, L63...C...R63 (1...64...127) | depend on the note |
| 3n | rr | 05 | 1 | 00-7F | REVERB SEND | 0-127 | depend on the note |
| 3n | rr | 06 | 1 | 00-7F | CHORUS SEND | 0-127 | depend on the note |
| 3n | rr | 07 | 1 | 00-7F | VARIATION SEND | 0-127 | 7F |
| 3n | rr | 08 | 1 | 00-01 | KEY ASSIGN | 0:SINGLE, 1:MULTI | 00 |
| 3n | rr | 09 | 1 | 00-01 | Rcv NOTE OFF | 0:OFF, 1:ON | depend on the note |
| 3n | rr | 0A | 1 | 00-01 | Rcv NOTE ON | 0:OFF, 1:ON | 01 |
| 3n | rr | 0B | 1 | 00-7F | FILTER CUTOFF FREQUENCY | -64 - +63 | 40 |
| 3n | rr | 0C | 1 | 00-7F | FILTER RESONANCE | -64 - +63 | 40 |
| 3n | rr | 0D | 1 | 00-7F | EG ATTACK RATE | -64 - +63 | 40 |
| 3n | rr | 0E | 1 | 00-7F | EG DECAY1 RATE | -64 - +63 | 40 |
| 3n | rr | 0F | 1 | 00-7F | EG DECAY2 RATE | -64 - +63 | 40 |
| TOTAL SIZE | | | 10 | | | | |

[Note]

n : Drum Setup number (0, 1)

rr : note number (0D-5B)

When XG system on or GM mode on messages are received, all Drum Setup parameters are initialized.

The Drum Setup Reset message can be used to initialize each Drum Setup parameter.

Selecting a Drum Set will cause the Drum Setup parameter values to be initialized.

● **Table 2-1**

Parameter Base Address
Model ID = 49 [**MU10** ]

| | Parameter Change | | | |
|---|---|---|---|---|
| | Address | | | Description |
| | High | Mid | Low | |
| MU80 SYSTEM | 00 | 00 | 00 | System |
| DB60XG SYSTEM | 01 | 00 | 00 | System |

● **Table 2-2**

MIDI Parameter Change Table ( SYSTEM ) [ **MU10** ]

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| 00 | 00 | 00 | 1 | | NOT USED | | |
| 00 | 00 | 01 | 1 | | NOT USED | | |
| 00 | 00 | 02 | 1 | | NOT USED | | |
| 00 | 00 | 03 | 1 | | NOT USED | | |
| 00 | 00 | 04 | 1 | | NOT USED | | |
| 00 | 00 | 05 | 1 | | NOT USED | | |
| 00 | 00 | 06 | 1 | | NOT USED | | |
| 00 | 00 | 07 | 1 | | NOT USED | | |
| 00 | 00 | 08 | 1 | | NOT USED | | |
| 00 | 00 | 09 | 1 | 00-07 | MULTI PORT NUMBER for MIDI OUT 1-8 | | 01 |
| 01 | 00 | 00 | 1 | | NOT USED | | |
| | | 01 | 1 | 00-01 | KARAOKE LOCK | OFF/ON | 00 |

● **Table 3-1**

Parameter Base Address
Model ID = 4B [ **QS300** ]

| | Bulk Dump | | | |
|---|---|---|---|---|
| | Address | | | Description |
| | High | Mid | Low | |
| User Normal Voice | 11 | 00 | 00 | User Normal Voice 1 |
| | : | : | : | : |
| | 11 | 1F | 00 | User Normal Voice 32 |

● **Table 3-2**

MIDI Bulk Dump Table ( USER NORMAL VOICE ) [ **QS300** ]

| Address (H) | | | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|---|---|
| | | | | | | [Common] | |
| 11 | nn | 00 | 17D | 20-7E | Voice Name | | |
| | | : | | | | | |
| | | 07 | | | | | |
| | | 08 | | | NOT USED | | |
| | | : | | | NOT USED | | |
| | | 0A | | | NOT USED | | |
| | | 0B | | 01-03 | Element Switch | 1:Element 1 on, 2:Element 2 on, 3:Element 1 and 2 on | |
| | | 0C | | 00-7F | Voice Level | | |
| | | 0D | | | NOT USED | | |
| | | : | | | NOT USED | | |
| | | 3C | | | NOT USED | | |

| Address (H) | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|
| | | | | [Element 1] | |
| 3D | | 00-7F | Wave Number High | bit 13 - bit 7 | |
| 3E | | 00-7F | Wave Number Low | bit 6 - bit 0 | |
| 3F | | 00-7F | Note Limit Low | | |
| 40 | | 00-7F | Note Limit High | | |
| 41 | | 00-7F | Velocity Limit Low | | |
| 42 | | 00-7F | Velocity Limit High | | |
| 43 | | 00-01 | Filter EG Velocity Curve | | |
| 44 | | 00-02 | LFO Wave Select | 0:saw, 1:tri, 2:S&H | |
| 45 | | 00-01 | LFO Phase Initialize | 0:OFF, 1:ON | |
| 46 | | 00-3F | LFO Speed | | |
| 47 | | 00-7F | LFO Delay | | |
| 48 | | 00-7F | LFO Fade Time | | |
| 49 | | 00-3F | LFO PMD Depth | | |
| 4A | | 00-0F | LFO CMD Depth | | |
| 4B | | 00-1F | LFO AMD Depth | | |
| 4C | | 20-60 | Note Shift | | |
| 4D | | 0E-72 | Detune | | |
| 4E | | 00-05 | Pitch Scaling | 0:100%, 1:50%, 2:20%, 3:10%, 4:5%, 5:0% | |
| 4F | | 00-7F | Pitch Scaling Center Note | | |
| 50 | | 00-03 | Pitch EG Depth | 0:1/2oct, 1:1oct, 2:2oct, 3:4oct | |
| 51 | | 39-47 | Velocity PEG Level Sensitivity | | |
| 52 | | 39-47 | Velocity PEG Rate Sensitivity | | |
| 53 | | 39-47 | PEG Rate Scaling | | |
| 54 | | 00-7F | PEG Rate Scaling Center Note | | |
| 55 | | 00-3F | PEG Rate 1 | | |
| 56 | | 00-3F | PEG Rate 2 | | |
| 57 | | 00-3F | PEG Rate 3 | | |
| 58 | | 00-3F | PEG Rate 4 | | |
| 59 | | 00-7F | PEG Level 0 | | |
| 5A | | 00-7F | PEG Level 1 | | |
| 5B | | 00-7F | PEG Level 2 | | |
| 5C | | 00-7F | PEG Level 3 | | |
| 5D | | 00-7F | PEG Level 4 | | |
| 5E | | 00-3F | Filter Resonance | | |
| 5F | | 00-07 | Velocity Sensitivity | | |
| 60 | | 00-7F | Cutoff Frequency | | |
| 61 | | 00-7F | Cutoff Scaling Break Point 1 | | |
| 62 | | 00-7F | Cutoff Scaling Break Point 2 | | |
| 63 | | 00-7F | Cutoff Scaling Break Point 3 | | |
| 64 | | 00-7F | Cutoff Scaling Break Point 4 | | |
| 65 | | 00-7F | Cutoff Scaling Offset 1 | | |
| 66 | | 00-7F | Cutoff Scaling Offset 2 | | |
| 67 | | 00-7F | Cutoff Scaling Offset 3 | | |
| 68 | | 00-7F | Cutoff Scaling Offset 4 | | |
| 69 | | 39-47 | Velocity FEG Level Sensitivity | | |
| 6A | | 39-47 | Velocity FEG Rate Sensitivity | | |
| 6B | | 39-47 | FEG Rate Scaling | | |
| 6C | | 00-7F | FEG Rate Scaling Center Note | | |
| 6D | | 00-3F | FEG Rate 1 | | |
| 6E | | 00-3F | FEG Rate 2 | | |
| 6F | | 00-3F | FEG Rate 3 | | |
| 70 | | 00-3F | FEG Rate 4 | | |
| 71 | | 00-7F | FEG Level 0 | | |
| 72 | | 00-7F | FEG Level 1 | | |
| 73 | | 00-7F | FEG Level 2 | | |
| 74 | | 00-7F | FEG Level 3 | | |
| 75 | | 00-7F | FEG Level 4 | | |
| 76 | | 00-7F | Element Level | | |
| 77 | | 00-7F | Level Scaling Break Point 1 | | |
| 78 | | 00-7F | Level Scaling Break Point 2 | | |
| 79 | | 00-7F | Level Scaling Break Point 3 | | |
| 7A | | 00-7F | Level Scaling Break Point 4 | | |
| 7B | | 00-7F | Level Scaling Offset 1 | | |
| 7C | | 00-7F | Level Scaling Offset 2 | | |
| 7D | | 00-7F | Level Scaling Offset 3 | | |
| 7E | | 00-7F | Level Scaling Offset 4 | | |
| 7F | | 00-06 | Velocity Curve | | |

| Address (H) | Size (H) | Data (H) | Parameter | Description | Default value(H) |
|---|---|---|---|---|---|
| 80 | | 00-0F | Pan | 0(Left)-14(Right),15:Scaling | |
| 81 | | 39-47 | AEG Rate Scaling | | |
| 82 | | 00-7F | AEG Scaling Center Note | | |
| 83 | | 00-0F | AEG Key on Delay | | |
| 84 | | 00-7F | AEG Attack Rate | | |
| 85 | | 00-7F | AEG Decay 1 Rate | | |
| 86 | | 00-7F | AEG Decay 2 Rate | | |
| 87 | | 00-7F | AEG Release Rate | | |
| 88 | | 00-7F | AEG Decay 1 Level | | |
| 89 | | 00-7F | AEG Decay 2 Level | | |
| 8A | | 00-7F | Address Offset High | bit 13 - bit 7 | |
| 8B | | 00-7F | Address Offset Low | bit 6 - bit 0 | |
| 8C | | 39-47 | Resonance Sensitivity | | |
| | | | | [Element 2] | |
| 8D | | | | Same as [Element 1] | |
| : | | | | Same as [Element 1] | |
| DC | | | | Same as [Element 1] | |
| | | | | [Element 3] | |
| DD | | | | NOT USED | |
| : | | | | NOT USED | |
| 12C | | | | NOT USED | |
| 12D | | | | [Element 4] | |
| : | | | | NOT USED | |
| 17C | | | | NOT USED | |
| TOTAL SIZE | 17D | | | | |

nn=Voice Number (00-1F)

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## ● Effect Type List

**REVERB**

| Exclusive | | Effect Type | Description |
|---|---|---|---|
| MSB | LSB | | |
| 00 | 00 | NO EFFECT | Effect turned off. |
| 01 | 00 | HALL1 | Reverb simulating the resonance of a hall. |
| 01 | 01 | HALL2 | Reverb simulating the resonance of a hall. |
| 02 | 00 | ROOM1 | Reverb simulating the resonance of a room. |
| 02 | 01 | ROOM2 | Reverb simulating the resonance of a room. |
| 02 | 02 | ROOM3 | Reverb simulating the resonance of a room. |
| 03 | 00 | STAGE1 | Reverb appropriate for a solo instrument. |
| 03 | 01 | STAGE2 | Reverb appropriate for a solo instrument. |
| 04 | 00 | PLATE | Reverb simulating a metal plate reverb unit. |
| 10 | 00 | WHITE ROOM | A unique short reverb with a bit of initial delay. |
| 11 | 00 | TUNNEL | Simulation of a tunnel space expanding to left and right. |
| 13 | 00 | BASEMENT | A bit of initial delay followed by reverb with a unique resonance. |

**CHORUS**

| Exclusive | | Effect Type | Description |
|---|---|---|---|
| MSB | LSB | | |
| 00 | 00 | NO EFFECT | NO EFFECT Effect turned off. |
| 41 | 00 | CHORUS1 | CHORUS1 Conventional chorus program that adds natural spaciousness. |
| 41 | 01 | CHORUS2 | CHORUS2 Conventional chorus program that adds natural spaciousness. |
| 41 | 02 | CHORUS3 | CHORUS3 Conventional chorus program that adds natural spaciousness. |
| 41 | 08 | CHORUS4 | CHORUS4 Chorus with stereo input. The pan setting specified for the Part will also apply to the effect sound. |
| 42 | 00 | CELESTE1 | CELESTE1 A 3-phase LFO adds modulation and spaciousness to the sound. |
| 42 | 01 | CELESTE2 | CELESTE2 A 3-phase LFO adds modulation and spaciousness to the sound. |
| 42 | 02 | CELESTE3 | CELESTE3 A 3-phase LFO adds modulation and spaciousness to the sound. |
| 42 | 08 | CELESTE4 | CELESTE4 Celeste with stereo input. The pan setting specified for the Part will also apply to the effect sound. |
| 43 | 00 | FLANGER1 | FLANGER1 Adds a jet-airplane effect to the sound. |
| 43 | 01 | FLANGER2 | FLANGER2 Adds a jet-airplane effect to the sound. |
| 43 | 08 | FLANGER3 | FLANGER3 Adds a jet-airplane effect to the sound. |

**VARIATION**

| Exclusive | | Effect Type | Description |
|---|---|---|---|
| MSB | LSB | | |
| 00 | 00 | NO EFFECT | Effect turned off. |
| 01 | 00 | HALL1 | Reverb simulating the resonance of a hall. |
| 01 | 01 | HALL2 | Reverb simulating the resonance of a hall. |
| 02 | 00 | ROOM1 | Reverb simulating the resonance of a room. |
| 02 | 01 | ROOM2 | Reverb simulating the resonance of a room. |
| 02 | 02 | ROOM3 | Reverb simulating the resonance of a room. |
| 03 | 00 | STAGE1 | Reverb appropriate for a solo instrument. |
| 03 | 01 | STAGE2 | Reverb appropriate for a solo instrument. |
| 04 | 00 | PLATE | Reverb simulating a metal plate reverb unit. |
| 05 | 00 | DELAY L, C, R | A program that creates three delay sounds; L, R, and C (center). |
| 06 | 00 | DELAY L, R | A program that creates two delay sounds; L and R. Two feedback delays are provided. |
| 07 | 00 | ECHO | Two delays (L and R) and independent feedback delays for L and R. |
| 08 | 00 | CROSS DELAY | A program that crosses the feedback of two delays. |
| 09 | 00 | EARLY REF1 | An effect that produces only the early reflection component of reverb. |
| 09 | 01 | EARLY REF2 | An effect that produces only the early reflection component of reverb. |
| 0A | 00 | GATE REVERB | A simulation of gated reverb. |
| 0B | 00 | REVERSE GATE | A program that simulates gated reverb played backwards. |
| 14 | 00 | KARAOKE 1 | A delay with feedback of the same types as used for karaoke reverb. |
| 14 | 01 | KARAOKE 2 | A delay with feedback of the same types as used for karaoke reverb. |
| 14 | 02 | KARAOKE 3 | A delay with feedback of the same types as used for karaoke reverb. |
| 41 | 00 | CHORUS1 | Conventional chorus program that adds natural spaciousness. |
| 41 | 01 | CHORUS2 | Conventional chorus program that adds natural spaciousness. |
| 41 | 02 | CHORUS3 | Conventional chorus program that adds natural spaciousness. |
| 41 | 08 | CHORUS4 | Chorus with stereo input. |
| 42 | 00 | CELESTE1 | A 3-phase LFO adds modulation and spaciousness to the sound. |
| 42 | 01 | CELESTE2 | A 3-phase LFO adds modulation and spaciousness to the sound. |
| 42 | 02 | CELESTE3 | A 3-phase LFO adds modulation and spaciousness to the sound. |
| 42 | 08 | CELESTE4 | Celeste with stereo input. |
| 43 | 00 | FLANGER1 | Adds a jet-airplane effect to the sound. |
| 43 | 01 | FLANGER2 | Adds a jet-airplane effect to the sound. |
| 43 | 08 | FLANGER3 | Adds a jet-airplane effect to the sound. |
| 44 | 00 | SYMPHONIC | A multi-phase version of CELESTE. |
| 45 | 00 | ROTARY SPEAKER | A simulation of a rotary speaker. You can use AC1 (assignable controller) etc. to control the speed of rotation. |
| 46 | 00 | TREMOLO | An effect that cyclically modulates the volume. |
| 47 | 00 | AUTO PAN | A program that cyclically moves that sound image to left and right, front and back. |
| 48 | 00 | PHASER1 | Cyclically changes the phase to add modulation to the sound. |
| 48 | 08 | PHASER2 | Phaser with stereo input. |
| 49 | 00 | DISTORTION | Adds a sharp-edged distortion to the sound. |
| 4A | 00 | OVER DRIVE | Adds mild distortion to the sound. |
| 4B | 00 | AMP SIMULATOR | A simulation of a guitar amp. |
| 4C | 00 | 3BAND EQ(MONO) | A mono EQ with adjustable LOW, MID, and HIGH equalizing. |
| 4D | 00 | 2BAND EQ(STEREO) | A stereo EQ with adjustable LOW and HIGH. Ideal for drum Parts. |
| 4E | 00 | AUTO WAH(LFO) | Cyclically modulates the center frequency of a wah filter. With an AC1 etc. this can function as a pedal wah. |
| 50 | 00 | PITCH CHANGE | This program changes the pitch of the input signal. |
| 40 | 00 | THRU | Bypass without applying an effect. |

\* MSB, LSB is represented in hexadecimal. \* LSB = 0 is the basic effect type.

## ● Effect Parameter List

### HALL1,2, ROOM1,2,3, STAGE1,2, PLATE

| No. * | Parameter | Range | Value | →P42** | Control |
|---|---|---|---|---|---|
| 1 | Reverb Time | 0.3 ~ 30.0s | 0-69 | table#4 | |
| 2 | Diffusion | 0 ~ 10 | 0-10 | | |
| 3 | Initial Delay | 0 ~ 63 | 0-63 | table#5 | |
| 4 | HPF Cutoff | Thru ~ 8.0kHz | 0-52 | table#3 | |
| 5 | LPF Cutoff | 1.0k ~ Thru | 34-60 | table#3 | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | Rev Delay | 0 ~ 63 | 0-63 | table#5 | |
| 12 | Density | 0 ~ 3 | 0-3 | | |
| 13 | Er/ Rev Balance | E63> R ~ E=R ~ E<R63 | 1-127 | | |
| 14 | | | | | |
| 15 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 16 | | | | | |

### ECHO

| No. * | Parameter | Range | Value | →P42** | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay1 | 0.1 ~ 355.0ms | 1-3550 | | |
| 2 | Lch Feedback Level | -63 ~ +63 | 1-127 | | |
| 3 | Rch Delay1 | 0.1 ~ 355.0ms | 1-3550 | | |
| 4 | Rch Feedback Level | -63 ~ +63 | 1-127 | | |
| 5 | High Damp | 0.1 ~ 1.0 | 1-10 | | |
| 6 | Lch Delay2 | 0.1 ~ 355.0ms | 1-3550 | | |
| 7 | Rch Delay2 | 0.1 ~ 355.0ms | 1-3550 | | |
| 8 | Delay2 Level | 0 ~ 127 | 0-127 | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 14 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12 ~ +12dB | 52-76 | | |

### WHITE ROOM, TUNNEL, BASEMENT

| No. * | Parameter | Range | Value | →P42** | Control |
|---|---|---|---|---|---|
| 1 | Reverb Time | 0.3 ~ 30.0s | 0-69 | table#4 | |
| 2 | Diffusion | 0 ~ 10 | 0-10 | | |
| 3 | Initial Delay | 0 ~ 63 | 0-63 | table#5 | |
| 4 | HPF Cutoff | Thru ~ 8.0kHz | 0-52 | table#3 | |
| 5 | LPF Cutoff | 1.0k ~ Thru | 34-60 | table#3 | |
| 6 | Width | 0.5 ~ 10.2m | 0-37 | table#8 | |
| 7 | Height | 0.5 ~ 20.2m | 0-73 | table#8 | |
| 8 | Depth | 0.5 ~ 30.2m | 0-104 | table#8 | |
| 9 | Wall Vary | 0 ~ 30 | 0-30 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | Rev Delay | 0 ~ 63 | 0-63 | table#5 | |
| 12 | Density | 0 ~ 3 | 0-3 | | |
| 13 | Er/ Rev Balance | E63> R ~ E=R ~ E<R63 | 1-127 | | |
| 14 | | | | | |
| 15 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 16 | | | | | |

### CROSS DELAY

| No. * | Parameter | Range | Value | →P42** | Control |
|---|---|---|---|---|---|
| 1 | L->R Delay | 0.1 ~ 355.0ms | 1-3550 | | |
| 2 | R->L Delay | 0.1 ~ 355.0ms | 1-3550 | | |
| 3 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 4 | Input Select | L,R,L&R | 0-2 | | |
| 5 | High Damp | 0.1 ~ 1.0 | 1-10 | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 14 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12 ~ +12dB | 52-76 | | |

### DELAY L,C,R

| No. * | Parameter | Range | Value | →P42** | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay | 0.1 ~ 715.0ms | 1-7150 | | |
| 2 | Rch Delay | 0.1 ~ 715.0ms | 1-7150 | | |
| 3 | Cch Delay | 0.1 ~ 715.0ms | 1-7150 | | |
| 4 | Feedback Delay | 0.1 ~ 715.0ms | 1-7150 | | |
| 5 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 6 | Cch Level | 0 ~ 127 | 0-127 | | |
| 7 | High Damp | 0.1 ~ 1.0 | 1-10 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 14 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12 ~ +12dB | 52-76 | | |

### EARLY REF1,2

| No. * | Parameter | Range | Value | →P42** | Control |
|---|---|---|---|---|---|
| 1 | Type | S-H, L-H, Rdm, Rvs, Plt, Spr | 0-5 | | |
| 2 | Room Size | 0.1 ~ 7.0 | 0-44 | table#6 | |
| 3 | Diffusion | 0 ~ 10 | 0-10 | | |
| 4 | Initial Delay | 0 ~ 63 | 0-63 | table#5 | |
| 5 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 6 | HPF Cutoff | Thru ~ 8.0kHz | 0-52 | | |
| 7 | LPF Cutoff | 1.0k ~ Thru | 34-60 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | Liveness | 0 ~ 10 | 0-10 | | |
| 12 | Density | 0 ~ 3 | 0-3 | | |
| 13 | High Damp | 0.1 ~ 1.0 | 1-10 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### DELAY L,R

| No. * | Parameter | Range | Value | →P42** | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay | 0.1 ~ 715.0ms | 1-7150 | | |
| 2 | Rch Delay | 0.1 ~ 715.0ms | 1-7150 | | |
| 3 | Feedback Delay 1 | 0.1 ~ 715.0ms | 1-7150 | | |
| 4 | Feedback Delay 2 | 0.1 ~ 715.0ms | 1-7150 | | |
| 5 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 6 | High Damp | 0.1 ~ 1.0 | 1-10 | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 14 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12 ~ +12dB | 52-76 | | |

### GATE REVERB, REVERSE GATE

| No. * | Parameter | Range | Value | →P42** | Control |
|---|---|---|---|---|---|
| 1 | Type | TypeA,TypeB | 0-1 | | |
| 2 | Room Size | 0.1 ~ 7.0 | 0-44 | table#6 | |
| 3 | Diffusion | 0 ~ 10 | 0-10 | | |
| 4 | Initial Delay | 0 ~ 63 | 0-63 | table#5 | |
| 5 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 6 | HPF Cutoff | Thru ~ 8.0kHz | 0-52 | | |
| 7 | LPF Cutoff | 1.0k ~ Thru | 34-60 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | Liveness | 0 ~ 10 | 0-10 | | |
| 12 | Density | 0 ~ 3 | 0-3 | | |
| 13 | High Damp | 0.1 ~ 1.0 | 1-10 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

- ● : Can be controlled by AC1 (Assignable Controller 1)
- No. * : These numbers correspond to the Parameter Suffix numbers in
  <Table 1 - 3> (page 29)
- →P42** : Refer to "Effect Data Assign Table"

### KARAOKE1,2,3

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | Delay Time | 0 ~ 127 | 0-127 | table#7 | |
| 2 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 3 | HPF Cutoff | Thru ~ 8.0kHz | 0-52 | | |
| 4 | LPF Cutoff | 1.0k ~ Thru | 34-60 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### ROTARY SPEAKER

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | ● |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### CHORUS1,2,3,4, CELESTE1,2,3,4

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO PM Depth | 0 ~ 127 | 0-127 | | |
| 3 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 4 | Delay Offset | 0 ~ 127 | 0-127 | table#2 | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | Input Mode | mono/stereo | 0-1 | | |
| 16 | | | | | |

### TREMOLO

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | ● |
| 2 | AM Depth | 0 ~ 127 | 0-127 | | |
| 3 | PM Depth | 0 ~ 127 | 0-127 | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | LFO Phase Difference | -180 ~ +180deg | 4-124 | resolution=3deg. | |
| 15 | Input Mode | mono/stereo | 0-1 | | |
| 16 | | | | | |

### FLANGER1,2,3

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 4 | Delay Offset | 0 ~ 63 | 0-63 | table#2 | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | LFO Phase Difference | -180 ~ +180deg | 4-124 | resolution=3deg. | |
| 15 | | | | | |
| 16 | | | | | |

### AUTO PAN

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | ● |
| 2 | L/R Depth | 0 ~ 127 | 0-127 | | |
| 3 | F/R Depth | 0 ~ 127 | 0-127 | | |
| 4 | PAN Direction | L<->R,L->R,L<-R,Lturn,Rturn,L/R | 0-5 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### SYMPHONIC

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | Delay Offset | 0 ~ 127 | 0-127 | table#2 | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### PHASER1,2

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | Phase Shift Offset | 0 ~ 127 | 0-127 | | |
| 4 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | Stage | 6 ~ 10(phaser1) / 3 ~ 5(phaser2) | 3-10 | | |
| 12 | Diffusion | Mono/Stereo | 0-1 | | |
| 13 | LFO Phase Difference | -180 ~ +180deg. | 4-124 | Phaser2 only | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

- ● : Can be controlled by AC1 (Assignable Controller 1)
- No. * : These numbers correspond to the Parameter Suffix numbers in
  <Table 1 - 3> (page 29)
- →P42**: Refer to "Effect Data Assign Table"

## DISTORTION,OVERDRIVE

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | Drive | 0 ~ 127 | 0-127 | | ● |
| 2 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 3 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 4 | LPF Cutoff | 1.0k ~ Thru | 34-60 | table#3 | |
| 5 | Output Level | 0 ~ 127 | 0-127 | | |
| 6 | | | | | |
| 7 | EQ Mid Frequency | 500Hz ~ 10.0kHz | 28-54 | table#3 | |
| 8 | EQ Mid Gain | -12 ~ +12dB | 52-76 | | |
| 9 | EQ Mid Width | 1.0 ~ 12.0 | 10-120 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | |
| 11 | Edge(Clip Curve) | 0 ~ 127 | 0-127 | mild ~ sharp | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## AUTO WAH

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | Cutoff Frequency Offset | 0 ~ 127 | 0-127 | | ● |
| 4 | Resonance | 1.0 ~ 12.0 | 10-120 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## GUITAR AMP SIMULATOR

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | Drive | 0 ~ 127 | 0-127 | | ● |
| 2 | AMP Type | Off,Stack,Combo,Tube | 0-3 | | |
| 3 | LPF Cutoff | 1.0k ~ Thru | 34-60 | table#3 | |
| 4 | Output Level | 0 ~ 127 | 0-127 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | |
| 11 | Edge(Clip Curve) | 0 ~ 127 | 0-127 | mild ~ sharp | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## PITCH CHANGE

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | Pitch | -24 ~ +24 | 40-88 | | |
| 2 | Initial Delay | 0 ~ 127 | 0-127 | | |
| 3 | Fine | -50 ~ +50 | 14-114 | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## 3-BAND EQ

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 2 | EQ Mid Frequency | 500Hz ~ 10.0kHz | 28-54 | table#3 | |
| 3 | EQ Mid Gain | -12 ~ +12dB | 52-76 | | |
| 4 | EQ Mid Width | 1.0 ~ 12.0 | 10-120 | | |
| 5 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## 2-BAND EQ

| No. * | Parameter | Range | Value | → P42** | Control |
|---|---|---|---|---|---|
| 1 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 2 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 3 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 4 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

- ● : Can be controlled by AC1 (Assignable Controller 1)
- No. * : These numbers correspond to the Parameter Suffix numbers in
  <Table 1 - 3> (page 29)
- →P42**: Refer to "Effect Data Assign Table"

# • Effect Data Assign Table

## Table#1
LFO Frequency (Hz)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.00 | 43 | 1.81 | 86 | 5.38 |
| 1 | 0.04 | 44 | 1.85 | 87 | 5.55 |
| 2 | 0.08 | 45 | 1.89 | 88 | 5.72 |
| 3 | 0.13 | 46 | 1.94 | 89 | 6.06 |
| 4 | 0.17 | 47 | 1.98 | 90 | 6.39 |
| 5 | 0.21 | 48 | 2.02 | 91 | 6.73 |
| 6 | 0.25 | 49 | 2.06 | 92 | 7.07 |
| 7 | 0.29 | 50 | 2.10 | 93 | 7.40 |
| 8 | 0.34 | 51 | 2.15 | 94 | 7.74 |
| 9 | 0.38 | 52 | 2.19 | 95 | 8.08 |
| 10 | 0.42 | 53 | 2.23 | 96 | 8.41 |
| 11 | 0.46 | 54 | 2.27 | 97 | 8.75 |
| 12 | 0.51 | 55 | 2.31 | 98 | 9.08 |
| 13 | 0.55 | 56 | 2.36 | 99 | 9.42 |
| 14 | 0.59 | 57 | 2.40 | 100 | 9.76 |
| 15 | 0.63 | 58 | 2.44 | 101 | 10.10 |
| 16 | 0.67 | 59 | 2.48 | 102 | 10.80 |
| 17 | 0.72 | 60 | 2.52 | 103 | 11.40 |
| 18 | 0.76 | 61 | 2.57 | 104 | 12.10 |
| 19 | 0.80 | 62 | 2.61 | 105 | 12.80 |
| 20 | 0.84 | 63 | 2.65 | 106 | 13.50 |
| 21 | 0.88 | 64 | 2.69 | 107 | 14.10 |
| 22 | 0.93 | 65 | 2.78 | 108 | 14.80 |
| 23 | 0.97 | 66 | 2.86 | 109 | 15.50 |
| 24 | 1.01 | 67 | 2.94 | 110 | 16.20 |
| 25 | 1.05 | 68 | 3.03 | 111 | 16.80 |
| 26 | 1.09 | 69 | 3.11 | 112 | 17.50 |
| 27 | 1.14 | 70 | 3.20 | 113 | 18.20 |
| 28 | 1.18 | 71 | 3.28 | 114 | 19.50 |
| 29 | 1.22 | 72 | 3.37 | 115 | 20.90 |
| 30 | 1.26 | 73 | 3.45 | 116 | 22.20 |
| 31 | 1.30 | 74 | 3.53 | 117 | 23.60 |
| 32 | 1.35 | 75 | 3.62 | 118 | 24.90 |
| 33 | 1.39 | 76 | 3.70 | 119 | 26.20 |
| 34 | 1.43 | 77 | 3.87 | 120 | 27.60 |
| 35 | 1.47 | 78 | 4.04 | 121 | 28.90 |
| 36 | 1.51 | 79 | 4.21 | 122 | 30.30 |
| 37 | 1.56 | 80 | 4.37 | 123 | 31.60 |
| 38 | 1.60 | 81 | 4.54 | 124 | 33.00 |
| 39 | 1.64 | 82 | 4.71 | 125 | 34.30 |
| 40 | 1.68 | 83 | 4.88 | 126 | 37.00 |
| 41 | 1.72 | 84 | 5.05 | 127 | 39.70 |
| 42 | 1.77 | 85 | 5.22 |  |  |

## Table#2
Modulation Delay Offset (ms)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.0 | 43 | 4.3 | 86 | 8.6 |
| 1 | 0.1 | 44 | 4.4 | 87 | 8.7 |
| 2 | 0.2 | 45 | 4.5 | 88 | 8.8 |
| 3 | 0.3 | 46 | 4.6 | 89 | 8.9 |
| 4 | 0.4 | 47 | 4.7 | 90 | 9.0 |
| 5 | 0.5 | 48 | 4.8 | 91 | 9.1 |
| 6 | 0.6 | 49 | 4.9 | 92 | 9.2 |
| 7 | 0.7 | 50 | 5.0 | 93 | 9.3 |
| 8 | 0.8 | 51 | 5.1 | 94 | 9.4 |
| 9 | 0.9 | 52 | 5.2 | 95 | 9.5 |
| 10 | 1.0 | 53 | 5.3 | 96 | 9.6 |
| 11 | 1.1 | 54 | 5.4 | 97 | 9.7 |
| 12 | 1.2 | 55 | 5.5 | 98 | 9.8 |
| 13 | 1.3 | 56 | 5.6 | 99 | 9.9 |
| 14 | 1.4 | 57 | 5.7 | 100 | 10.0 |
| 15 | 1.5 | 58 | 5.8 | 101 | 11.1 |
| 16 | 1.6 | 59 | 5.9 | 102 | 12.2 |
| 17 | 1.7 | 60 | 6.0 | 103 | 13.3 |
| 18 | 1.8 | 61 | 6.1 | 104 | 14.4 |
| 19 | 1.9 | 62 | 6.2 | 105 | 15.5 |
| 20 | 2.0 | 63 | 6.3 | 106 | 17.1 |
| 21 | 2.1 | 64 | 6.4 | 107 | 18.6 |
| 22 | 2.2 | 65 | 6.5 | 108 | 20.2 |
| 23 | 2.3 | 66 | 6.6 | 109 | 21.8 |
| 24 | 2.4 | 67 | 6.7 | 110 | 23.3 |
| 25 | 2.5 | 68 | 6.8 | 111 | 24.9 |
| 26 | 2.6 | 69 | 6.9 | 112 | 26.5 |
| 27 | 2.7 | 70 | 7.0 | 113 | 28.0 |
| 28 | 2.8 | 71 | 7.1 | 114 | 29.6 |
| 29 | 2.9 | 72 | 7.2 | 115 | 31.2 |
| 30 | 3.0 | 73 | 7.3 | 116 | 32.8 |
| 31 | 3.1 | 74 | 7.4 | 117 | 34.3 |
| 32 | 3.2 | 75 | 7.5 | 118 | 35.9 |
| 33 | 3.3 | 76 | 7.6 | 119 | 37.5 |
| 34 | 3.4 | 77 | 7.7 | 120 | 39.0 |
| 35 | 3.5 | 78 | 7.8 | 121 | 40.6 |
| 36 | 3.6 | 79 | 7.9 | 122 | 42.2 |
| 37 | 3.7 | 80 | 8.0 | 123 | 43.7 |
| 38 | 3.8 | 81 | 8.1 | 124 | 45.3 |
| 39 | 3.9 | 82 | 8.2 | 125 | 46.9 |
| 40 | 4.0 | 83 | 8.3 | 126 | 48.4 |
| 41 | 4.1 | 84 | 8.4 | 127 | 50.0 |
| 42 | 4.2 | 85 | 8.5 |  |  |

## Table#3
EQ Frequency (Hz)

| Data | Value | Data | Value |
|---|---|---|---|
| 0 | THRU(20) | 43 | 2.8k |
| 1 | 22 | 44 | 3.2k |
| 2 | 25 | 45 | 3.6k |
| 3 | 28 | 46 | 4.0k |
| 4 | 32 | 47 | 4.5k |
| 5 | 36 | 48 | 5.0k |
| 6 | 40 | 49 | 5.6k |
| 7 | 45 | 50 | 6.3k |
| 8 | 50 | 51 | 7.0k |
| 9 | 56 | 52 | 8.0k |
| 10 | 63 | 53 | 9.0k |
| 11 | 70 | 54 | 10.0k |
| 12 | 80 | 55 | 11.0k |
| 13 | 90 | 56 | 12.0k |
| 14 | 100 | 57 | 14.0k |
| 15 | 110 | 58 | 16.0k |
| 16 | 125 | 59 | 18.0k |
| 17 | 140 | 60 | THRU(20.0k) |
| 18 | 160 |  |  |
| 19 | 180 |  |  |
| 20 | 200 |  |  |
| 21 | 225 |  |  |
| 22 | 250 |  |  |
| 23 | 280 |  |  |
| 24 | 315 |  |  |
| 25 | 355 |  |  |
| 26 | 400 |  |  |
| 27 | 450 |  |  |
| 28 | 500 |  |  |
| 29 | 560 |  |  |
| 30 | 630 |  |  |
| 31 | 700 |  |  |
| 32 | 800 |  |  |
| 33 | 900 |  |  |
| 34 | 1.0k |  |  |
| 35 | 1.1k |  |  |
| 36 | 1.2k |  |  |
| 37 | 1.4k |  |  |
| 38 | 1.6k |  |  |
| 39 | 1.8k |  |  |
| 40 | 2.0k |  |  |
| 41 | 2.2k |  |  |
| 42 | 2.5k |  |  |

## Table#4
Reverb Time (s)

| Data | Value | Data | Value |
|---|---|---|---|
| 0 | 0.3 | 43 | 4.6 |
| 1 | 0.4 | 44 | 4.7 |
| 2 | 0.5 | 45 | 4.8 |
| 3 | 0.6 | 46 | 4.9 |
| 4 | 0.7 | 47 | 5.0 |
| 5 | 0.8 | 48 | 5.5 |
| 6 | 0.9 | 49 | 6.0 |
| 7 | 1.0 | 50 | 6.5 |
| 8 | 1.1 | 51 | 7.0 |
| 9 | 1.2 | 52 | 7.5 |
| 10 | 1.3 | 53 | 8.0 |
| 11 | 1.4 | 54 | 8.5 |
| 12 | 1.5 | 55 | 9.0 |
| 13 | 1.6 | 56 | 9.5 |
| 14 | 1.7 | 57 | 10.0 |
| 15 | 1.8 | 58 | 11.0 |
| 16 | 1.9 | 59 | 12.0 |
| 17 | 2.0 | 60 | 13.0 |
| 18 | 2.1 | 61 | 14.0 |
| 19 | 2.2 | 62 | 15.0 |
| 20 | 2.3 | 63 | 16.0 |
| 21 | 2.4 | 64 | 17.0 |
| 22 | 2.5 | 65 | 18.0 |
| 23 | 2.6 | 66 | 19.0 |
| 24 | 2.7 | 67 | 20.0 |
| 25 | 2.8 | 68 | 25.0 |
| 26 | 2.9 | 69 | 30.0 |
| 27 | 3.0 |  |  |
| 28 | 3.1 |  |  |
| 29 | 3.2 |  |  |
| 30 | 3.3 |  |  |
| 31 | 3.4 |  |  |
| 32 | 3.5 |  |  |
| 33 | 3.6 |  |  |
| 34 | 3.7 |  |  |
| 35 | 3.8 |  |  |
| 36 | 3.9 |  |  |
| 37 | 4.0 |  |  |
| 38 | 4.1 |  |  |
| 39 | 4.2 |  |  |
| 40 | 4.3 |  |  |
| 41 | 4.4 |  |  |
| 42 | 4.5 |  |  |

## Table#5
Delay Time (ms)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.1 | 43 | 67.8 | 86 | 135.5 |
| 1 | 1.7 | 44 | 69.4 | 87 | 137.0 |
| 2 | 3.2 | 45 | 70.9 | 88 | 138.6 |
| 3 | 4.8 | 46 | 72.5 | 89 | 140.2 |
| 4 | 6.4 | 47 | 74.1 | 90 | 141.8 |
| 5 | 8.0 | 48 | 75.7 | 91 | 143.3 |
| 6 | 9.5 | 49 | 77.2 | 92 | 144.9 |
| 7 | 11.1 | 50 | 78.8 | 93 | 146.5 |
| 8 | 12.7 | 51 | 80.4 | 94 | 148.1 |
| 9 | 14.3 | 52 | 81.9 | 95 | 149.6 |
| 10 | 15.8 | 53 | 83.5 | 96 | 151.2 |
| 11 | 17.4 | 54 | 85.1 | 97 | 152.8 |
| 12 | 19.0 | 55 | 86.7 | 98 | 154.4 |
| 13 | 20.6 | 56 | 88.2 | 99 | 155.9 |
| 14 | 22.1 | 57 | 89.8 | 100 | 157.5 |
| 15 | 23.7 | 58 | 91.4 | 101 | 159.1 |
| 16 | 25.3 | 59 | 93.0 | 102 | 160.6 |
| 17 | 26.9 | 60 | 94.5 | 103 | 162.2 |
| 18 | 28.4 | 61 | 96.1 | 104 | 163.8 |
| 19 | 30.0 | 62 | 97.7 | 105 | 165.4 |
| 20 | 31.6 | 63 | 99.3 | 106 | 166.9 |
| 21 | 33.2 | 64 | 100.8 | 107 | 168.5 |
| 22 | 34.7 | 65 | 102.4 | 108 | 170.1 |
| 23 | 36.3 | 66 | 104.0 | 109 | 171.7 |
| 24 | 37.9 | 67 | 105.6 | 110 | 173.2 |
| 25 | 39.5 | 68 | 107.1 | 111 | 174.8 |
| 26 | 41.0 | 69 | 108.7 | 112 | 176.4 |
| 27 | 42.6 | 70 | 110.3 | 113 | 178.0 |
| 28 | 44.2 | 71 | 111.9 | 114 | 179.5 |
| 29 | 45.7 | 72 | 113.4 | 115 | 181.1 |
| 30 | 47.3 | 73 | 115.0 | 116 | 182.7 |
| 31 | 48.9 | 74 | 116.6 | 117 | 184.3 |
| 32 | 50.5 | 75 | 118.2 | 118 | 185.8 |
| 33 | 52.0 | 76 | 119.7 | 119 | 187.4 |
| 34 | 53.6 | 77 | 121.3 | 120 | 189.0 |
| 35 | 55.2 | 78 | 122.9 | 121 | 190.6 |
| 36 | 56.8 | 79 | 124.4 | 122 | 192.1 |
| 37 | 58.3 | 80 | 126.0 | 123 | 193.7 |
| 38 | 59.9 | 81 | 127.6 | 124 | 195.3 |
| 39 | 61.5 | 82 | 129.2 | 125 | 196.9 |
| 40 | 63.1 | 83 | 130.7 | 126 | 198.4 |
| 41 | 64.6 | 84 | 132.3 | 127 | 200.0 |
| 42 | 66.2 | 85 | 133.9 |  |  |

## Table#6
Room Size (m)

| Data | Value | Data | Value |
|---|---|---|---|
| 0 | 0.1 | 43 | 6.8 |
| 1 | 0.3 | 44 | 7.0 |
| 2 | 0.4 |  |  |
| 3 | 0.6 |  |  |
| 4 | 0.7 |  |  |
| 5 | 0.9 |  |  |
| 6 | 1.0 |  |  |
| 7 | 1.2 |  |  |
| 8 | 1.4 |  |  |
| 9 | 1.5 |  |  |
| 10 | 1.7 |  |  |
| 11 | 1.8 |  |  |
| 12 | 2.0 |  |  |
| 13 | 2.1 |  |  |
| 14 | 2.3 |  |  |
| 15 | 2.5 |  |  |
| 16 | 2.6 |  |  |
| 17 | 2.8 |  |  |
| 18 | 2.9 |  |  |
| 19 | 3.1 |  |  |
| 20 | 3.2 |  |  |
| 21 | 3.4 |  |  |
| 22 | 3.5 |  |  |
| 23 | 3.7 |  |  |
| 24 | 3.9 |  |  |
| 25 | 4.0 |  |  |
| 26 | 4.2 |  |  |
| 27 | 4.3 |  |  |
| 28 | 4.5 |  |  |
| 29 | 4.6 |  |  |
| 30 | 4.8 |  |  |
| 31 | 5.0 |  |  |
| 32 | 5.1 |  |  |
| 33 | 5.3 |  |  |
| 34 | 5.4 |  |  |
| 35 | 5.6 |  |  |
| 36 | 5.7 |  |  |
| 37 | 5.9 |  |  |
| 38 | 6.1 |  |  |
| 39 | 6.2 |  |  |
| 40 | 6.4 |  |  |
| 41 | 6.5 |  |  |
| 42 | 6.7 |  |  |

## Table#7
Delay Time (ms)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.1 | 43 | 135.5 | 86 | 270.9 |
| 1 | 3.2 | 44 | 138.6 | 87 | 274.0 |
| 2 | 6.4 | 45 | 141.8 | 88 | 277.2 |
| 3 | 9.5 | 46 | 144.9 | 89 | 280.3 |
| 4 | 12.7 | 47 | 148.1 | 90 | 283.5 |
| 5 | 15.8 | 48 | 151.2 | 91 | 286.6 |
| 6 | 19.0 | 49 | 154.4 | 92 | 289.8 |
| 7 | 22.1 | 50 | 157.5 | 93 | 292.9 |
| 8 | 25.3 | 51 | 160.7 | 94 | 296.1 |
| 9 | 28.4 | 52 | 163.8 | 95 | 299.2 |
| 10 | 31.6 | 53 | 167.0 | 96 | 302.4 |
| 11 | 34.7 | 54 | 170.1 | 97 | 305.5 |
| 12 | 37.9 | 55 | 173.3 | 98 | 308.7 |
| 13 | 41.0 | 56 | 176.4 | 99 | 311.8 |
| 14 | 44.2 | 57 | 179.6 | 100 | 315.0 |
| 15 | 47.3 | 58 | 182.7 | 101 | 318.1 |
| 16 | 50.5 | 59 | 185.9 | 102 | 321.3 |
| 17 | 53.6 | 60 | 189.0 | 103 | 324.4 |
| 18 | 56.8 | 61 | 192.2 | 104 | 327.6 |
| 19 | 59.9 | 62 | 195.3 | 105 | 330.7 |
| 20 | 63.1 | 63 | 198.5 | 106 | 333.9 |
| 21 | 66.2 | 64 | 201.6 | 107 | 337.0 |
| 22 | 69.4 | 65 | 204.8 | 108 | 340.2 |
| 23 | 72.5 | 66 | 207.9 | 109 | 343.3 |
| 24 | 75.7 | 67 | 211.1 | 110 | 346.5 |
| 25 | 78.8 | 68 | 214.2 | 111 | 349.6 |
| 26 | 82.0 | 69 | 217.4 | 112 | 352.8 |
| 27 | 85.1 | 70 | 220.5 | 113 | 355.9 |
| 28 | 88.3 | 71 | 223.7 | 114 | 359.1 |
| 29 | 91.4 | 72 | 226.8 | 115 | 362.2 |
| 30 | 94.6 | 73 | 230.0 | 116 | 365.4 |
| 31 | 97.7 | 74 | 233.1 | 117 | 368.5 |
| 32 | 100.9 | 75 | 236.3 | 118 | 371.7 |
| 33 | 104.0 | 76 | 239.4 | 119 | 374.8 |
| 34 | 107.2 | 77 | 242.6 | 120 | 378.0 |
| 35 | 110.3 | 78 | 245.7 | 121 | 381.1 |
| 36 | 113.5 | 79 | 248.9 | 122 | 384.3 |
| 37 | 116.6 | 80 | 252.0 | 123 | 387.4 |
| 38 | 119.8 | 81 | 255.2 | 124 | 390.6 |
| 39 | 122.9 | 82 | 258.3 | 125 | 393.7 |
| 40 | 126.1 | 83 | 261.5 | 126 | 396.9 |
| 41 | 129.2 | 84 | 264.6 | 127 | 400.0 |
| 42 | 132.4 | 85 | 267.7 |  |  |

## Table#8
Reverb Width; Depth; Height (m)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.5 | 43 | 11.8 | 86 | 24.2 |
| 1 | 0.8 | 44 | 12.1 | 87 | 24.5 |
| 2 | 1.0 | 45 | 12.3 | 88 | 24.9 |
| 3 | 1.3 | 46 | 12.6 | 89 | 25.2 |
| 4 | 1.5 | 47 | 12.9 | 90 | 25.5 |
| 5 | 1.8 | 48 | 13.1 | 91 | 25.8 |
| 6 | 2.0 | 49 | 13.4 | 92 | 26.1 |
| 7 | 2.3 | 50 | 13.7 | 93 | 26.5 |
| 8 | 2.6 | 51 | 14.0 | 94 | 26.8 |
| 9 | 2.8 | 52 | 14.2 | 95 | 27.1 |
| 10 | 3.1 | 53 | 14.5 | 96 | 27.5 |
| 11 | 3.3 | 54 | 14.8 | 97 | 27.8 |
| 12 | 3.6 | 55 | 15.1 | 98 | 28.1 |
| 13 | 3.9 | 56 | 15.4 | 99 | 28.5 |
| 14 | 4.1 | 57 | 15.6 | 100 | 28.8 |
| 15 | 4.4 | 58 | 15.9 | 101 | 29.2 |
| 16 | 4.6 | 59 | 16.2 | 102 | 29.5 |
| 17 | 4.9 | 60 | 16.5 | 103 | 29.9 |
| 18 | 5.2 | 61 | 16.8 | 104 | 30.2 |
| 19 | 5.4 | 62 | 17.1 |  |  |
| 20 | 5.7 | 63 | 17.3 |  |  |
| 21 | 5.9 | 64 | 17.6 |  |  |
| 22 | 6.2 | 65 | 17.9 |  |  |
| 23 | 6.5 | 66 | 18.2 |  |  |
| 24 | 6.7 | 67 | 18.5 |  |  |
| 25 | 7.0 | 68 | 18.8 |  |  |
| 26 | 7.2 | 69 | 19.1 |  |  |
| 27 | 7.5 | 70 | 19.4 |  |  |
| 28 | 7.8 | 71 | 19.7 |  |  |
| 29 | 8.0 | 72 | 20.0 |  |  |
| 30 | 8.3 | 73 | 20.2 |  |  |
| 31 | 8.6 | 74 | 20.5 |  |  |
| 32 | 8.8 | 75 | 20.8 |  |  |
| 33 | 9.1 | 76 | 21.1 |  |  |
| 34 | 9.4 | 77 | 21.4 |  |  |
| 35 | 9.6 | 78 | 21.7 |  |  |
| 36 | 9.9 | 79 | 22.0 |  |  |
| 37 | 10.2 | 80 | 22.4 |  |  |
| 38 | 10.4 | 81 | 22.7 |  |  |
| 39 | 10.7 | 82 | 23.0 |  |  |
| 40 | 11.0 | 83 | 23.3 |  |  |
| 41 | 11.2 | 84 | 23.6 |  |  |
| 42 | 11.5 | 85 | 23.9 |  |  |

# ■ MIDIデータフォーマット

MIDIメッセージをMU10に送ることで、MU10の音源部のさまざまな設定をコントロールすることができます。ここでは、MU10が受信するMIDIメッセージの種類と働きについて詳しく説明します。

* 各メッセージのMU10への送信方法については、お使いのシーケンスソフト等の取扱説明書をお読みください。

## ■受信

### 1. チャンネルメッセージ

#### 1.1 ノートオン／ノートオフ
受信ノート範囲＝C-2 (0) ～G8 (127)：C3=60
ベロシティ範囲＝1～127 (Velocity はノートオンのみ受信)
鍵盤の演奏情報を伝えるメッセージ。
ノートオン：鍵盤を押さえたというメッセージ
ノートオフ：鍵盤を離したというメッセージ
各メッセージには、どの鍵盤を演奏したかを示す「ノートナンバー」と、どれくらいの強さで演奏したかを示す「ベロシティ」という2種類のデータが含まれる。
マルチパートパラメーター(付表1-4：31ページ)のRcv NOTE MESSAGE＝OFFの時、そのパートでは受信しない。リズム・パートでは、ドラムセットアップパラメーター(付表1-6：34ページ)のRcv NOTE OFF＝OFFの時ノートオフを受信する。また、同様にRcv NOTE ON＝OFFの時ノートオンを受信しない。

#### 1.2 コントロール チェンジ
ボリュームやパンなどをコントロールするメッセージ。機能によってコントロールナンバーが異なる。
マルチパートパラメーター(付表1-4：31ページ)のRcv CONTROL CHANGE＝OFFの時、そのパートのいずれのコントロールチェンジも受信しない。また、マルチパートパラメーター(付表1-4：31ページ)の各コントロールチェンジのレシーブの設定をOFFに設定している時、そのパートのコントロールチェンジは受信しない。

#### 1.2.1 Bank Select (バンクセレクト)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 0 | Bank Select MSB | 0:Normal, 63:User Voice, 64:SFX, 126:SFX Kit, 127:Drum |
| 32 | Bank Select LSB | 0...127 |

ボイスのバンクを選択するMIDIメッセージ。
MSBとLSBの2つのコントロールチェンジの組み合わせでボイスバンクが選択される。演奏モードによってMSBとLSBの働きが異なる。
演奏モードが「XG」の時は、MSBの値でノーマルボイスとドラムボイスといったボイスの大きな区分けを、LSBの値でバンク指定をする。
演奏モードが「TG300B」の時は、LSBの値を固定して、MSBの値だけでボイスのバンク指定をする。
バンクセレクトMSB、LSBを受信した後、プログラムチェンジを受信してはじめてボイスバンクが切り替わる。

#### 1.2.2 Modulation (モジュレーションホイール)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 1 | Modulation | 0...127 |

ビブラートをかける深さをコントロールする。
0でビブラートなし、127でビブラート最大。

#### 1.2.3 Portamento Time (ポルタメントタイム)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 5 | Portamento Time | 0...127 |

ポルタメントのかかり方（ピッチ変化速度）をコントロールする。
1.2.9 PortamentoをONにしないと効果はかからない。0でポルタメント最短時間、127でポルタメント最長時間。

#### 1.2.4 Data Entry (データエントリー)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 6 | Data Entry MSB | 0...127 |
| 38 | Data Entry LSB | 0...127 |

RPN MSB、RPN LSBや、NRPN MSB、NRPN LSBで指定したパラメーターの値を設定する。MSBとLSBの2つのコントロールチェンジの組み合わせでパラメーターの値が設定される。

#### 1.2.5 Main Volume (メインボリューム)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 7 | Main Volume | 0...127 |

パートごとのボリュームをコントロールする。
0で音が出ない、127で音量最大。

#### 1.2.6 Pan (パンポット)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 10 | Pan | 0...127 |

パートごとのパン(ステレオ再生時の音の定位)をコントロールする。0で左、127で右となる。

#### 1.2.7 Expression (エクスプレッション)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 11 | Expression | 0...127 |

パートごとのエクスプレッションをコントロールする。
0で音が出ない、127で音量最大。

#### 1.2.8 Hold1 (ホールド1)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 64 | Hold1 | 0...127 |

サステインペダルのオン/オフをコントロールする。
ペダルを踏んだ時に発音している音を持続する。
0～63の時サステインペダルがオフ(離した状態)、64～127の時オン(踏んだ状態)になる。

#### 1.2.9 Portamento (ポルタメント)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 65 | Portamento | 0...127 |

ポルタメントペダルのオン/オフをコントロールする。
ペダルを踏むと、ポルタメント効果がかかる。
0～63の時ポルタメントがオフ(離した状態)、64～127の時オン(踏んだ状態)になる。1.2.3 Portamento Timeでかかり方を調節する。

#### 1.2.10 Sostenuto (ソステヌートペダル)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 66 | Sostenuto | 0...127 |

ソステヌートペダルのオン/オフをコントロールする。
ペダルを踏んだ時に押さえていた鍵盤の音の発音を持続する。0～63の時ソステヌートペダルがオフ(離した状態)、64～127の時オン(踏んだ状態)になる。

#### 1.2.11 Soft Pedal (ソフトペダル)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 67 | Soft Pedal | 0...127 |

ソフトペダルのオン/オフをコントロールする。
ペダルを踏んでいる間は、音が柔らかくなる。
データが0～63の時ソフトペダルがオフ(離した状態)、64～127の時オン(踏んだ状態)になる。

#### 1.2.12 Harmonic Content (ハーモニックコンテント)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 71 | Harmonic Content | 0...127 (0:-64, 64:+0, 127:+63) |

音色で設定されているレゾナンスを調節する。
0～127の値を-64～+63に置き換えて、オフセット値として元の音色データに加算されレゾナンスが変更される。
値が大きくなるほどクセのある音になる。音色により、効果のある範囲が設定できる範囲より狭い場合がある。

#### 1.2.13 Release Time (リリースタイム)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 72 | Release Time | 0...127 (0:-64, 64:+0, 127:+63) |

音色で設定されているエンベロープ・リリース・タイムを調節する。0～127の値を-64～+63に置き換えて、オフセット値として元の音色データに加算され、リリースタイムが変更される。

#### 1.2.14 Attack Time (アタックタイム)
| Cntrl# | parameter | Data Range |
|---|---|---|
| 73 | Attack Time | 0...127 (0:-64, 64:+0, 127:+63) |

音色で設定されているエンベロープ・アタック・タイムを調節する。0～127の値を-64～+63に置き換えて、オフセット値として元の音色データに加算され、アタックタイムが変更される。

### 1.2.15 Brightness（ブライトネス）

| Cntrl# | parameter | Data Range |
|--------|-----------|------------|
| 74 | Brightness | 0...127 (0:-64, 64:+0, 127:+63) |

音色で設定されているフィルターのカットオフ周波数を調節する。0〜127の値を-64〜+63に置き換えて、オフセット値として元の音色データに加算され、カットオフフリケンシーが変更される。値が小さくなるほど柔らかな音になる。音色により、効果のある範囲が設定できる範囲より狭い場合がある。

### 1.2.16 Portamento Control（ポルタメントコントロール）

| Cntrl# | parameter | Data Range |
|--------|-----------|------------|
| 84 | Portamento Control | 0...127 |

ポルタメントのソースキーナンバー(ポルタメントを開始するキーナンバー)を指定する。0〜127のデータでノートナンバーを設定する。
たとえばC3からC4に向かってポルタメントをかけたい場合は、以下のように設定する。
90 3C 7F ‥‥ C3をノートオン
B0 54 3C ‥‥ ソースキーナンバーをC3に指定
90 48 7F ‥‥ C4をノートオン(ノートオンと同時にC3は消え、C4へポルタメントがかかる)
ポルタメントコントロールを受信すると発音中の音程は、次に受信する同じチャンネルのノートオンのキーに、ポルタメントタイム0の速度で変化する。マルチパートパラメーター(付表1-4：22ページ)のRcv PORTAMENTO = OFF であっても受信する。

### 1.2.17 Effect1 Depth（リバーブセンドレベル）

| Cntrl# | parameter | Data Range |
|--------|-----------|------------|
| 91 | Effect1 Depth | 0...127 |

リバーブエフェクトに対するセンドレベルを設定する。

### 1.2.18 Effect3 Depth（コーラスセンドレベル）

| Cntrl# | parameter | Data Range |
|--------|-----------|------------|
| 93 | Effect3 Depth | 0...127 |

コーラスエフェクトに対するセンドレベルを設定する。

### 1.2.19 Effect4 Depth （バリエーションエフェクトセンドレベル）

| Cntrl# | parameter | Data Range |
|--------|-----------|------------|
| 94 | Effect4 Depth | 0...127 |

エフェクトパラメーター(付表1-3：29ページ )のVariation Connection = 1(System)の時、バリエーションエフェクトに対するセンドレベルを設定する。Variation Connection = 0 (Insertion)の時は効果なし。

### 1.2.20 Data Increment / Decrement （RPN用） （データインクリメント／デクリメント）

| Cntrl# | parameter | Data Range |
|--------|-----------|------------|
| 96 | RPN Increment | 0...127 |
| 97 | RPN Decrement | 0...127 |

データバイトは無視される。
RPNでピッチベンドセンシティビティ、ファインチューン、コースチューンを指定した後、それぞれのパラメーターの値を1ずつ増減する。インクリメント／デクリメントさせて最大値／最小値に達したら、それ以上の値の増減はしない。(ファインチューンをインクリメントしたらコースチューンが繰りあがるような動作もしない)

### 1.2.21 NRPN （ノンレジスタード パラメーター ナンバー）

| Cntrl# | parameter | Data Range |
|--------|-----------|------------|
| 98 | NRPN LSB | 0...127 |
| 99 | NRPN MSB | 0...127 |

ビブラートやフィルター、EG、ドラムセットアップなど、音色の設定をオフセット値で変更するためのMIDIメッセージ。NRPN MSB、NRPN LSBで変更したいパラメーターを指定した後、データエントリーでパラメーターの値を設定する。

* 一旦NRPNが設定されると、その後同じチャンネルで受信するデータエントリーは、設定したNRPNの値として処理される。このメッセージを使ってコントロールした後は、パラメーターナンバーを Null (7FH, 7FH) に設定して誤操作を防止することが必要。

次の NRPN を受信することができる。

| NRPN MSB | LSB | Data entry MSB | パラメーター名と値の範囲 |
|----------|-----|------|----------------------|
| 01H | 08H | mmH | ビブラートレイト<br>mm : 00H - 40H - 7FH (-64 - 0 - +63) |
| 01H | 09H | mmH | ビブラートデプス<br>mm : 00H - 40H - 7FH (-64 - 0 - +63) |
| 01H | 0AH | mmH | ビブラートディレイ<br>mm : 00H - 40H - 7FH (-64 - 0 - +63) |
| 01H | 20H | mmH | フィルターカットオフフリケンシー<br>mm : 00H - 40H - 7FH (-64 - 0 - +63) |
| 01H | 21H | mmH | フィルターレゾナンス<br>mm : 00H - 40H - 7FH (-64 - 0 - +63) |
| 01H | 63H | mmH | EG アタックタイム<br>mm : 00H - 40H - 7FH (-64 - 0 - +63) |
| 01H | 64H | mmH | EG ディケイタイム<br>mm : 00H - 40H - 7FH (-64 - 0 - +63) |
| 01H | 66H | mmH | EG リリースタイム<br>mm : 00H - 40H - 7FH (-64 - 0 - +63) |
| 14H | rrH | mmH | ドラムフィルターカットオフフリケンシー<br>mm : 00H - 40H - 7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 15H | rrH | mmH | ドラムフィルターレゾナンス<br>mm : 00H - 40H - 7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 16H | rrH | mmH | ドラム EG アタックレイト<br>mm : 00H - 40H - 7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 17H | rrH | mmH | ドラム EG ディケイレイト<br>mm : 00H - 40H - 7FH (-64 - 0 - +63)<br>rr : drum instrument note number<br>Decay1,2 共に効果がかかる。 |
| 18H | rrH | mmH | ドラムインストゥルメントピッチコース<br>mm : 00H - 40H - 7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 19H | rrH | mmH | ドラムインストゥルメントピッチファイン<br>mm : 00H - 40H - 7FH (-64 - 0 - +63)<br>rr : drum instrument note number |
| 1AH | rrH | mmH | ドラムインストゥルメントレベル<br>mm : 00H - 7FH (0 - 最大)<br>rr : drum instrument note number |
| 1CH | rrH | mmH | ドラムインストゥルメントパンポット<br>mm : 00H, 01H - 40H - 7FH<br>(ランダム, 左 - 中央 - 右)<br>rr : drum instrument note number |
| 1DH | rrH | mmH | ドラムインストゥルメントリバーブ<br>センドレベル<br>mm : 00H - 7FH (0 - 最大)<br>rr : drum instrument note number |
| 1EH | rrH | mmH | ドラムインストゥルメントコーラス<br>センドレベル<br>mm : 00H - 7FH (0 - 最大)<br>rr : drum instrument note number |
| 1FH | rrH | mmH | ドラムインストゥルメント<br>バリエーションセンドレベル<br>mm : 00H - 7FH (0 - 最大)<br>rr : drum instrument note number |

MSB 14H-1FH（ドラム用)はマルチパートパラメーター(付表1-4：22ページ)のPART MODE = DRUMS1, DRUMS2が選択されている場合のみ有効。(PART MODE = DRUMの場合はエディットできない)

### 1.2.22 RPN （レジスタード パラメーター ナンバー）

| Cntrl# | parameter | Data Range |
|--------|-----------|------------|
| 100 | RPN LSB | 0...127 (Default : 7FH) |
| 101 | RPN MSB | 0...127 (Default : 7FH) |

ピッチベンドセンシティビティやチューニングなど、パートの設定をオフセット値で変更するためのMIDIメッセージ。

* 一旦 RPN が設定されると、その後同じチャンネルで受信するデータエントリーは、設定したRPNの値として処理される。このメッセージを使ってコントロールした後は、パラメーターナンバーをNull (7FH, 7FH) に設定して誤操作を防止することが必要。

次の RPN を受信することができる。

| RPN | | Data entry | | |
|-----|-----|-----|-----|-----|
| MSB | LSB | MSB | LSB | パラメーター名と値の範囲 |
| 00H | 00H | mmH | -- | ピッチベンドセンシティビティ |
| | | | | mm:00H-18H (0-24半音) |
| | | | | 半音単位で2オクターブまで設定可能 |
| | | | | Default:02H |
| | | | | LSB の値は無視する。 |
| 00H | 01H | mmH | 1lH | ファインチューニング |
| | | | | mm:00H-40H-7FH (-64-0-+63) |
| 00H | 02H | mmH | -- | コースチューニング |
| | | | | mm:28H - 40H - 58H (-24 - +24半音) |
| | | | | LSB の値は無視する。 |
| 7FH | 7FH | -- | -- | RPN Null |
| | | | | RPN および NRPN 番号を |
| | | | | キャンセルする。 |

### 1.2.23 チャンネル モード メッセージ
以下のチャンネルモードメッセージを受信する。

| 2nd byte | 3rd byte | メッセージ |
|----------|----------|-----------|
| 120 | 0 | All Sound Off |
| 121 | 0 | Reset All Controllers |
| 123 | 0 | All Note Off |
| 124 | 0 | Omni Off |
| 125 | 0 | Omni On |
| 126 | 0 ～ 16 | Mono |
| 127 | 0 | Poly |

#### 1.2.23.1 All Sound Off (オールサウンドオフ)
該当チャンネル(各パート)の発音中の音をすべて消音する。ただし、ノートオンやホールドオンなどのチャンネルメッセージの状態は保持している。

#### 1.2.23.2 Reset All Controllers (リセットオールコントローラー)
次の各コントローラーの設定を初期値に戻す。

| コントローラー | 設定値 |
|--------------|--------|
| ピッチベンドチェンジ | ±0 (中央) |
| チャンネルプレッシャー | 0 (オフ) |
| ポリフォニックアフタータッチ | 0 (オフ) |
| モジュレーション | 0 (オフ) |
| エクスプレッション | 127 (最大) |
| ホールド1 | 0 (オフ) |
| ポルタメント | 0 (オフ) |
| ソステヌート | 0 (オフ) |
| ソフトペダル | 0 (オフ) |
| ポルタメントコントロール | 受信したポルタメントソースノートナンバーをキャンセル |
| RPN | 番号未設定状態、それまで設定されていたデータに影響はない |
| NRPN | 番号未設定状態、それまで設定されていたデータに影響はない |

#### 1.2.23.3 All Note Off (オールノートオフ)
該当チャンネルのオンしているノートをすべてオフする。ただし、ホールド1もしくはソステヌートがオンの場合は、それらがオフになるまで発音は終了しない。

#### 1.2.23.4 Omni Off (オムニオフ)
オール・ノート・オフを受信した時と同じ処理を行う。

#### 1.2.23.5 Omni On (オムニオン)
オール・ノート・オフを受信した時と同じ処理を行う。

#### 1.2.23.6 Mono (モノ)
オール・サウンド・オフを受信した時と同じ処理を行い、3rd byte(モノ数)が0 ～ 16の範囲内にあれば該当チャンネルをモノモード(Mode4：m = 1)にする。

#### 1.2.23.7 Poly (ポリ)
オール・サウンド・オフを受信した時と同じ処理を行い、該当チャンネルをポリモード(Mode3)にする。

### 1.3 プログラムチェンジ
ボイスを選択するためのメッセージ。
バンクセレクトと組み合わせて使用すると、基本ボイスバンクだけでなく拡張ボイスバンクのボイスを選択できるようになる。マルチパートパラメーター(付表1-4：31ページ)の Rcv PROGRAM CHANGE = OFF の時、そのパートのプログラムチェンジは受信しない。

### 1.4 ピッチベンド
ピッチベンドホイールの演奏を伝えて、ピッチを変化させるメッセージ。マルチパートパラメーター(付表1-4：31ページ)の Rcv PITCH BEND CHANGE = OFF の時、そのパートのピッチベンドは受信しない。

### 1.5 チャンネル アフター タッチ
鍵盤を弾いた後、更に押し込む強さを伝えて、音に変化を付けるメッセージ。初期設定はオフ。マルチパートパラメーター(付表1-4：31ページ)の Rcv CHANNEL AFTER TOUCH = OFF の時、そのパートのチャンネル アフター タッチは受信しない。

### 1.6 ポリフォニックアフタータッチ
各鍵盤ごとに、鍵盤を弾いた後、更に押し込む強さを伝えるメッセージ。初期設定はオフ。マルチパートパラメーター(付表1-4：31ページ)の Rcv POLYPHONIC AFTER TOUCH = OFF の時、そのパートのポリフォニック アフター タッチは受信しない。ノート番号36-97の範囲のみ効果がかかる。

## 2. システム エクスクルーシブ メッセージ
直接的な演奏情報ではなく、MIDI機器のシステムに関する設定を行うMIDIメッセージ。このMIDIメッセージを使うと、外部MIDI機器からMU10のほとんどすべての設定をエディットすることも可能。MU10のデバイスナンバーは "All (オール)" に固定されている。

### 2.1 パラメーター チェンジ
MU10 は、以下のパラメーターチェンジを扱う。

[ ユニバーサル リアルタイム メッセージ ]
  1) Master Volume
[ ユニバーサル ノン・リアルタイム メッセージ ]
  1) General MIDI Mode On
[ XGネイティブパラメーターチェンジ ]
  1) XG System on
  2) XG System Data parameter change
  3) Multi Effect1 Data parameter change
  4) Multi Part Data parameter change
  5) A/D Part Data parameter change
  6) A/D System Data parameter change
  7) Drums Setup Data parameter change
[ MU10ネイティブパラメーターチェンジ ]
  1) MU10 System Data parameter change
[ その他 ]
  1) Master tuning
  2) TG300 System Data parameter change
  3) TG300 Multi Effect Data parameter change
  4) TG300 Mutli Part Data parameter change

### 2.1.2 ユニバーサル リアルタイム メッセージ
#### 2.1.2.1 Master Volume (マスターボリューム)

```
11110000  F0   Exclusive status
01111111  7F   Universal Real Time
01111111  7F   ID of target device
00000100  04   Sub-ID #1=Device Control Message
00000001  01   Sub-ID #2=Master Volume
0sssssss  ss*  Volume LSB
0ttttttt  tt   Volume MSB
11110111  F7   End of Exclusive
または、
11110000  F0   Exclusive status
01111111  7F   Universal Real Time
0xxxnnnn  xn   Device Number, xxx=don't care
00000100  04   Sub-ID #1=Device Control Message
00000001  01   Sub-ID #2=Master Volume
0sssssss  ss   Volume LSB
0ttttttt  tt   Volume MSB
11110111  F7   End of Exclusive
```

受信すると、Volume MSB がシステムパラメーター(9ページ)の
MASTER VOLUME に反映される。
* 0sssssss の16進表現ss、他も同様

### 2.1.3 ユニバーサル ノン リアルタイム メッセージ
#### 2.1.3.1 General MIDI Mode On (GMモードオン)

```
11110000  F0  Exclusive status
01111110  7E  Universal Non-Real Time
01111111  7F  ID of target device
00001001  09  Sub-ID #1=General MIDI Message
00000001  01  Sub-ID #2=General MIDI On
11110111  F7  End of Exclusive
```
または、
```
11110000  F0  Exclusive status
01111110  7E  Universal Non-Real Time
0xxxnnnn  xn  Device Number, xxx=don't care
00001001  09  Sub-ID #1=General MIDI Message
00000001  01  Sub-ID #2=General MIDI On
11110111  F7  End of Exclusive
```
ON を受信すると演奏モードがXGモードに変更され、GMに定
義されたすべてのMIDIメッセージを受信可能な状態になる。そ
のため、NRPNとバンクセレクトについては受信しなくなる。こ
のメッセージの実行には、約50msかかるため、次のメッセージ
との間隔を注意すること。

### 2.1.4 XGネイティブ パラメーターチェンジ
MU10に対して以下のパラメーターチェンジメッセージを送るこ
とで、音源(ボイス)の細かな設定(エフェクトタイプやエフェク
トパラメーター、トランスポーズ、チューニングなど)を変更す
ることができる。
```
11110000  F0  Exclusive status
01000011  43  YAMAHA ID
0001nnnn  1n  device Number
01001100  4C  XG Model ID
0aaaaaaa  aa  Address High
0aaaaaaa  aa  Address Mid
0aaaaaaa  aa  Address Low
0ddddddd  dd  Data
   |       |
11110111  F7  End of Exclusive
```
データサイズが2または4のパラメーターはそのサイズ分デー
タを送信する。メッセージを続けて送る場合は、次のメッセー
ジとの間を少し(タイムベース480の場合、約5クロック)開ける
こと。

---

**●パラメーターチェンジの例**
**1. バリエーションエフェクトタイプを"ECHO"に変更する場合**
まず、「エフェクトタイプリスト」(48ページ)を見て、"ECHO"エ
フェクトについてタイプとMSB, LSBを調べる。
　→VARIATIONタイプのエフェクトで、MSB=07, LSB=00
次に<付表1-3>(29ページ)のVARIATION TYPEの項を見て、
Address (High, Mid, Low) の値を調べる。
　→High Mid Low = 02　01　40
以上のデータを2.1.4 XG ネイティブパラメーターチェンジの式
にあてはめて、MU10に送信する。
```
11110000  F0  Exclusive status
01000011  43  YAMAHA ID
0001nnnn  1n* device Number
01001100  4C  XG Model ID
00000010  02  Address High
00000001  01  Address Mid
01000000  40  Address Low
00000111  07  Data(VARIATION TYPE MSB)
00000000  00  Data(VARIATION TYPE LSB)
11110111  F7  End of Exclusive
```
このデータを受けると、MU10で現在選択されているボイスのエ
フェクトタイプは"ECHO"に変更される。
* MU10 のデバイスナンバーは"All (オール)"に固定されている
ので、n は任意の数字でよい。

---

**2. 選択した"ECHO"エフェクトの Dry/Wet を半分ずつ(Dry=Wet)
に変更する場合**
まず、「エフェクトパラメーターリスト」(49ページ)を見て、
"ECHO"エフェクトの Dry/Wet パラメーターについて調べる。
　→No.10のパラメーターで、Dry=WetのValueは64 (16進で40)
次に<付表1-3>(29ページ)のVARIATION PARAMETER 10の項
を見て、Address (High, Mid, Low) の値を調べる。
　→High Mid Low = 02　01　54
以上のデータを2.1.4 XG ネイティブパラメーターチェンジの式
にあてはめて、MU10に送信する。
```
11110000  F0  Exclusive status
01000011  43  YAMAHA ID
0001nnnn  1n  device Number
01001100  4C  XG Model ID
00000010  02  Address High
00000001  01  Address Mid
01010100  54  Address Low
01000000  40  Data (MSB)←設定値
00000000  00  Data (LSB)←00のまま
11110111  F7  End of Exclusive
```
このデータを受けると、MU10で現在選択されているECHOエ
フェクトのDry/Wetの値が半分ずつ(Dry=Wet)に変更される。

---

MIDIメッセージの処理には若干時間がかかります。
再生する音源がMU10に限定されている場合は、全チャンネル
(パート)の曲頭に空白小節を作り、そこにパラメーターチェン
ジのセットアップデータを入力することをおすすめします。

---

#### 2.1.4.1 XG System On (XGシステムオン)
```
11110000  F0  Exclusive status
01000011  43  YAMAHA ID
0001nnnn  1n  device Number
01001100  4C  XG Model ID
00000000  00  Address High
00000000  00  Address Mid
01111110  7E  Address Low
00000000  00  Data
11110111  F7  End of Exclusive
```
MU10を「XG」に準拠した音源として機能させるためのメッセー
ジ。このメッセージを受信すると、演奏モードを「XG」に変更
し、すべてのパラメーターは初期化される。A/Dパートのパラ
メーターは、バリエーションセンド以外は以前の値が保存され
る。バリエーションセンドの値は0となる。さらにNRPN、バン
クセレクトなど、XGに定義されたすべてのMIDIメッセージが受
信可能な状態になる。このメッセージの実行には、約50msかか
るため、次のメッセージとの間隔を注意すること。

---

**●演奏モードの切り替え(XGモードとTG300Bモード)**
```
XG System On  = F0 43 1n 4C 00 00 7E 00 F7
TG 300B Reset = F0 41 1n 42 12 40 00 7F 00 41 F7
                n=デバイスナンバー
```

---

#### 2.1.4.2 XG System Data parameter change
　　　(XGシステムデータパラメーターチェンジ)
付表<1-1>(29ページ), <1-2>(29ページ)参照。

#### 2.1.4.3 Multi Effect1 Data parameter change
　　　(マルチエフェクト1データパラメーターチェンジ)
付表<1-1>(29ページ), <1-3>(29ページ)参照。

#### 2.1.4.4 Multi Part Data parameter change
　　　(マルチパートデータパラメーターチェンジ)
付表<1-1>(29ページ), <1-4>(31ページ)参照。

#### 2.1.4.5 A/D Part Data parameter change
　　　(A/Dパートデータパラメーターチェンジ)
付表<1-1>(29ページ), <1-5>(33ページ)参照。

### 2.1.4.6 Drums Setup Data parameter change
（ドラムセットアップデータパラメーターチェンジ）
付表＜1-1＞（29ページ），＜1-6＞（34ページ）参照。

Drum Setup Reset メッセージ(付表1-2：29ページ)を受信すると、
Drum Setup parameter の値は初期化される。
ドラムセットを切り替えると、Drum Setup parameter の値は初期
化される。

### 2.1.5 MU10ネイティブ パラメーターチェンジ
```
11110000  F0  Exclusive status
01000011  43  YAMAHA ID
0001nnnn  1n  device Number
01001001  49  Model ID
0aaaaaaa  aa  Address High
0aaaaaaa  aa  Address Mid
0aaaaaaa  aa  Address Low
0ddddddd  dd  Data
   |        |
11110111  F7  End of Exclusive
```

#### 2.1.5.1 MU10 System Data parameter change
（MU10システムデータパラメーターチェンジ）
付表＜2-1＞（35ページ），＜2-2＞（35ページ）参照。

### 2.1.6 その他のパラメーターチェンジ
#### 2.1.6.1 マスターチューニング
```
11110000  F0  Exclusive status
01000011  43  YAMAHA ID
0001nnnn  1n  device Number
00100111  27  Model ID
00110000  30  Sub ID2
00000000  00
00000000  00
0mmmmmmm  mm  Master Tune MSB
01111111  11  Master Tune LSB
0ccccccc  cc  don't care
11110111  F7  End of Exclusive
```
全チャンネルの音程を一度に変えられるメッセージ。

### 2.2 バルクダンプ
本機は、以下の バルクデータを扱う。

[ XGネイティブ ]
1) XG System Data
2) Multi Effect1 Data
3) Multi Part Data
4) A/D Part Data
5) Drums Setup Data
[QS300 ネイティブ]
1) QS300 User Normal Voice Data

### 2.2.1 XGネイティブ バルクダンプ
```
11110000  F0  Exclusive status
01000011  43  YAMAHA ID
0000nnnn  0n  device Number
01001100  4C  XG Model ID
0bbbbbbb  bb  ByteCount
0bbbbbbb  bb  ByteCount
0aaaaaaa  aa  Address High
0aaaaaaa  aa  Address Mid
0aaaaaaa  aa  Address Low
0ddddddd  dd  Data
   |        |
   |        |
0ccccccc  cc  Check-sum
11110111  F7  End of Exclusive
```
Address および Byte Count は、付表を参照すること。
Check sum は、Start Address, Byte Count, Data, Check-sum 自身を
加算した値の下位7bit がゼロになる値である。

#### 2.2.1.1 XG System Data bulk dump
（XGシステムデータバルクダンプ）
付表＜1-1＞（29ページ），＜1-2＞（29ページ）参照。

#### 2.2.1.2 Multi Effect1 Data bulk dump
（マルチエフェクト1データバルクダンプ）
付表＜1-1＞（29ページ），＜1-3＞（29ページ）参照。

#### 2.2.1.3 Multi Part Data bulk dump
（マルチパートデータバルクダンプ）
付表＜1-1＞（29ページ），＜1-4＞（31ページ）参照。

#### 2.2.1.4 A/D Part Data bulk dump
（A/Dパートデータバルクダンプ）
付表＜1-1＞（29ページ），＜1-5＞（33ページ）参照。

#### 2.2.1.5 Drums Setup Data bulk dump
（マルチセットアップデータバルクダンプ）
付表＜1-1＞（29ページ），＜1-6＞（34ページ）参照。

### 2.2.2 QS300 ネイティブ バルクダンプ
QS300で作成したボイスを32音まで、MU10のユーザーメモリー
にバルクダンプすることができる。(演奏モードがXGの時のみ有
効)
バンク MSB = 63, LSB = 00 に QS300 ユーザーボイスが入る。プ
ログラムチェンジ1～32。
```
11110000  F0  Exclusive status
01000011  43  YAMAHA ID
0000nnnn  0n  device Number
01001011  4B  QS300 Model ID
0bbbbbbb  bb  ByteCount
0bbbbbbb  bb  ByteCount
0aaaaaaa  aa  Address High
0aaaaaaa  aa  Address Mid
0aaaaaaa  aa  Address Low
0ddddddd  dd  Data
   |
   |
0ccccccc  cc  Check-sum
11110111  F7  End of Exclusive
```
＊ エレメントの関係上、QS300のボイスが正しく再現されない場
合がある。

#### 2.2.2.1 QS300 User Normal Voice Data bulk dump
（QS300ユーザーノーマルボイスデータバルクダンプ）
付表＜3-1＞（35ページ），＜3-2＞（35ページ）参照。

## 3. リアルタイムメッセージ
### 3.1 アクティブセンシング
アクティブセンシング (FE) を1度受信してから約300msec以上たっ
ても次のMIDI信号がこない場合は、オールサウンドオフ、オール
ノートオフ、リセットオールコントローラーを受信した時と同じ
処理をする。

## ■送信

HOST SELECTスイッチで"MIDI"以外が選ばれている場
合、TO HOST端子に入力されたデータをそのままスルー
アウトする。
ポート信号を含むデータがTO HOST端子に入力された場
合は、付表＜2-2＞（35ページ）のMULTI PORT NUMBER
for MIDI OUTで設定されているポートの信号のみをMIDI
OUTする。

## ● エフェクトタイプリスト

### REVERB

| Exclusive | | Effect Type | 特 徴 |
|---|---|---|---|
| MSB | LSB | | |
| 00 | 00 | NO EFFECT | エフェクトを OFF にします。 |
| 01 | 00 | HALL1 | ホールでの響きをシミュレートしたリバーブです。 |
| 01 | 01 | HALL2 | 〃 |
| 02 | 00 | ROOM1 | 部屋の響きをシミュレートしたリバーブです。 |
| 02 | 01 | ROOM2 | 〃 |
| 02 | 02 | ROOM3 | 〃 |
| 03 | 00 | STAGE1 | ソロ楽器に適したリバーブです。 |
| 03 | 01 | STAGE2 | 〃 |
| 04 | 00 | PLATE | 鉄板リバーブをシミュレートしたリバーブです。 |
| 10 | 00 | WHITE ROOM | 若干のイニシャルディレイを持った独特のショートリバーブです。 |
| 11 | 00 | TUNNEL | 左右に広がった筒状の空間のシミュレートです。 |
| 13 | 00 | BASEMENT | 若干のイニシャルディレイの後に、独特の響きを持ったリバーブです。 |

### CHORUS

| Exclusive | | Effect Type | 特 徴 |
|---|---|---|---|
| MSB | LSB | | |
| 00 | 00 | NO EFFECT | エフェクトを OFF にします。 |
| 41 | 00 | CHORUS1 | 一般的なコーラスプログラムです。音を自然に広げます。 |
| 41 | 01 | CHORUS2 | 〃 |
| 41 | 02 | CHORUS3 | 〃 |
| 41 | 08 | CHORUS4 | ステレオ入力のコーラスです。パートで設定した PAN がエフェクト音にも有効となります。 |
| 42 | 00 | CELESTE1 | 3 相の LFO により、音にうねりと広がりを与えるプログラムです。 |
| 42 | 01 | CELESTE2 | 〃 |
| 42 | 02 | CELESTE3 | 〃 |
| 42 | 08 | CELESTE4 | ステレオ入力のセレステです。パートで設定した PAN がエフェクト音にも有効となります。 |
| 43 | 00 | FLANGER1 | ジェットサウンドを与えます。 |
| 43 | 01 | FLANGER2 | 〃 |
| 43 | 08 | FLANGER3 | 〃 |

### VARIATION

| Exclusive | | Effect Type | 特 徴 |
|---|---|---|---|
| MSB | LSB | | |
| 00 | 00 | NO EFFECT | エフェクトを OFF にします。 |
| 01 | 00 | HALL1 | ホールでの響きをシミュレートしたリバーブです。 |
| 01 | 01 | HALL2 | 〃 |
| 02 | 00 | ROOM1 | 部屋の響きをシミュレートしたリバーブです。 |
| 02 | 01 | ROOM2 | 〃 |
| 02 | 02 | ROOM3 | 〃 |
| 03 | 00 | STAGE1 | ソロ楽器に適したリバーブです。 |
| 03 | 01 | STAGE2 | 〃 |
| 04 | 00 | PLATE | 鉄板リバーブをシミュレートしたリバーブです。 |
| 05 | 00 | DELAY L,C,R | L, R, C (center) の3本のディレイ音を発生するプログラムです。 |
| 06 | 00 | DELAY L,R | L, R2本のディレイ音を発生するプログラムです。2本のフィードバックディレイを持っています。 |
| 07 | 00 | ECHO　L, R | 2本のディレイとL,R独立のフィードバックディレイを持っています。 |
| 08 | 00 | CROSS DELAY | 2本のディレイのフィードバックをクロスさせたプログラムです。 |
| 09 | 00 | EARLY REF1 | リバーブの初期反射音のみを取り出したエフェクトです。 |
| 09 | 01 | EARLY REF2 | 〃 |
| 0A | 00 | GATE REVERB | ゲートリバーブをシミュレートしたものです。 |
| 0B | 00 | REVERSE GATE | ゲートリバーブの逆再生をシミュレートしたプログラムです。 |
| 14 | 00 | KARAOKE 1 | カラオケ用のエコーと同じ仕組みのフィードバック付きのディレイです。 |
| 14 | 01 | KARAOKE 2 | 〃 |
| 14 | 02 | KARAOKE 3 | 〃 |
| 41 | 00 | CHORUS1 | 一般的なコーラスプログラムです。音を自然に広げます。 |
| 41 | 01 | CHORUS2 | 〃 |
| 41 | 02 | CHORUS3 | 〃 |
| 41 | 08 | CHORUS4 | ステレオ入力のコーラスです。 |
| 42 | 00 | CELESTE1 | 3 相の LFO により、音にうねりと広がりを与えるプログラムです。 |
| 42 | 01 | CELESTE2 | 〃 |
| 42 | 02 | CELESTE3 | 〃 |
| 42 | 08 | CELESTE4 | ステレオ入力のセレステです。 |
| 43 | 00 | FLANGER1 | ジェットサウンドを与えます。 |
| 43 | 01 | FLANGER2 | 〃 |
| 43 | 08 | FLANGER3 | 〃 |
| 44 | 00 | SYMPHONIC | CELESTE の変調をより多重化したものです。 |
| 45 | 00 | ROTARY SPEAKER | 回転スピーカーをシミュレートしたものです。AC1 (アサイナブルコントローラー1) などで、回転スピードをコントロールできます。 |
| 46 | 00 | TREMOLO | 音量を周期的に変化させるエフェクトです。 |
| 47 | 00 | AUTO PAN | 音像を左右、前後に周期的に移動させるプログラムです。 |
| 48 | 00 | PHASER1 | 位相（フェイズ）を周期的に変化させ音にうねりを持たせます。 |
| 48 | 08 | PHASER2 | ステレオ入力のフェーザーです。 |
| 49 | 00 | DISTORTION | 音にエッジの効いた歪みを与えます。 |
| 4A | 00 | OVER DRIVE | 音にマイルドな歪みを与えます。 |
| 4B | 00 | AMP SIMULATOR | ギターアンプをシミュレートしたものです。 |
| 4C | 00 | 3BAND EQ(MONO) | LOW, MID, HIGH のイコライジングが可能な MONO EQ です。 |
| 4D | 00 | 2BAND EQ(STEREO) | LOW, HIGH のイコライジングが可能な STEREO EQ です。ドラムパートに最適です。 |
| 4E | 00 | AUTO WAH(LFO) | ワウフィルターの中心周波数を周期的に変化させます。AC1 などでペダルワウとしても使えます。 |
| 50 | 00 | PITCH CHANGE | 入力信号の音程を変えるプログラムです。 |
| 40 | 00 | THRU | エフェクトをかけずにバイパスします。 |

* MSB, LSBともに16進表示です。　　　　* LSB=0のエフェクトはベーシックタイプです。

## ● エフェクトパラメーターリスト

### HALL1,2, ROOM1,2,3 ,STAGE1,2, PLATE

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Reverb Time | 0.3～30.0s | 0-69 | table#4 | |
| 2 | Diffusion | 0～10 | 0-10 | | |
| 3 | Initial Delay | 0～63 | 0-63 | table#5 | |
| 4 | HPF Cutoff | Thru～8.0kHz | 0-52 | table#3 | |
| 5 | LPF Cutoff | 1.0k～Thru | 34-60 | table#3 | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W～D=W～D<W63 | 1-127 | | ● |
| 11 | Rev Delay | 0～63 | 0-63 | table#5 | |
| 12 | Density | 0～3 | 0-3 | | |
| 13 | Er/ Rev Balance | E63>R～E=R～E<R63 | 1-127 | | |
| 14 | | | | | |
| 15 | Feedback Level | -63～+63 | 1-127 | | |
| 16 | | | | | |

### WHITE ROOM ,TUNNEL, BASEMENT

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Reverb Time | 0.3～30.0s | 0-69 | table#4 | |
| 2 | Diffusion | 0～10 | 0-10 | | |
| 3 | Initial Delay | 0～63 | 0-63 | table#5 | |
| 4 | HPF Cutoff | Thru～8.0kHz | 0-52 | table#3 | |
| 5 | LPF Cutoff | 1.0k～Thru | 34-60 | table#3 | |
| 6 | Width | 0.5～10.2m | 0-37 | table#8 | |
| 7 | Height | 0.5～20.2m | 0-73 | table#8 | |
| 8 | Depth | 0.5～30.2m | 0-104 | table#8 | |
| 9 | Wall Vary | 0～30 | 0-30 | | |
| 10 | Dry/Wet | D63>W～D=W～D<W63 | 1-127 | | ● |
| 11 | Rev Delay | 0～63 | 0-63 | table#5 | |
| 12 | Density | 0～3 | 0-3 | | |
| 13 | Er/ Rev Balance | E63>R～E=R～E<R63 | 1-127 | | |
| 14 | | | | | |
| 15 | Feedback Level | -63～+63 | 1-127 | | |
| 16 | | | | | |

### DELAY L,C,R

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay | 0.1～715.0ms | 1-7150 | | |
| 2 | Rch Delay | 0.1～715.0ms | 1-7150 | | |
| 3 | Cch Delay | 0.1～715.0ms | 1-7150 | | |
| 4 | Feedback Delay | 0.1～715.0ms | 1-7150 | | |
| 5 | Feedback Level | -63～+63 | 1-127 | | |
| 6 | Cch Level | 0～127 | 0-127 | | |
| 7 | High Damp | 0.1～1.0 | 1-10 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W～D=W～D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 50Hz～2.0kHz | 8-40 | table#3 | |
| 14 | EQ Low Gain | -12～+12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz～16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12～+12dB | 52-76 | | |

### DELAY L,R

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay | 0.1～715.0ms | 1-7150 | | |
| 2 | Rch Delay | 0.1～715.0ms | 1-7150 | | |
| 3 | Feedback Delay 1 | 0.1～715.0ms | 1-7150 | | |
| 4 | Feedback Delay 2 | 0.1～715.0ms | 1-7150 | | |
| 5 | Feedback Level | -63～+63 | 1-127 | | |
| 6 | High Damp | 0.1～1.0 | 1-10 | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W～D=W～D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 50Hz～2.0kHz | 8-40 | table#3 | |
| 14 | EQ Low Gain | -12～+12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz～16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12～+12dB | 52-76 | | |

### ECHO

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Lch Delay1 | 0.1～355.0ms | 1-3550 | | |
| 2 | Lch Feedback Level | -63～+63 | 1-127 | | |
| 3 | Rch Delay1 | 0.1～355.0ms | 1-3550 | | |
| 4 | Rch Feedback Level | -63～+63 | 1-127 | | |
| 5 | High Damp | 0.1～1.0 | 1-10 | | |
| 6 | Lch Delay2 | 0.1～355.0ms | 1-3550 | | |
| 7 | Rch Delay2 | 0.1～355.0ms | 1-3550 | | |
| 8 | Delay2 Level | 0～127 | 0-127 | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W～D=W～D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 50Hz～2.0kHz | 8-40 | table#3 | |
| 14 | EQ Low Gain | -12～+12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz～16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12～+12dB | 52-76 | | |

### CROSS DELAY

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | L->R Delay | 0.1～355.0ms | 1-3550 | | |
| 2 | R->L Delay | 0.1～355.0ms | 1-3550 | | |
| 3 | Feedback Level | -63～+63 | 1-127 | | |
| 4 | Input Select | L,R,L&R | 0-2 | | |
| 5 | High Damp | 0.1～1.0 | 1-10 | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W～D=W～D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | EQ Low Frequency | 50Hz～2.0kHz | 8-40 | table#3 | |
| 14 | EQ Low Gain | -12～+12dB | 52-76 | | |
| 15 | EQ High Frequency | 500Hz～16.0kHz | 28-58 | table#3 | |
| 16 | EQ High Gain | -12～+12dB | 52-76 | | |

### EARLY REF1,2

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Type | S-H, L-H, Rdm, Rvs, Plt, Spr | 0-5 | | |
| 2 | Room Size | 0.1～7.0 | 0-44 | table#6 | |
| 3 | Diffusion | 0～10 | 0-10 | | |
| 4 | Initial Delay | 0～63 | 0-63 | table#5 | |
| 5 | Feedback Level | -63～+63 | 1-127 | | |
| 6 | HPF Cutoff | Thru～8.0kHz | 0-52 | | |
| 7 | LPF Cutoff | 1.0k～Thru | 34-60 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W～D=W～D<W63 | 1-127 | | ● |
| 11 | Liveness | 0～10 | 0-10 | | |
| 12 | Density | 0～3 | 0-3 | | |
| 13 | High Damp | 0.1～1.0 | 1-10 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

### GATE REVERB,REVERSE GATE

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Type | TypeA,TypeB | 0-1 | | |
| 2 | Room Size | 0.1～7.0 | 0-44 | table#6 | |
| 3 | Diffusion | 0～10 | 0-10 | | |
| 4 | Initial Delay | 0～63 | 0-63 | table#5 | |
| 5 | Feedback Level | -63～+63 | 1-127 | | |
| 6 | HPF Cutoff | Thru～8.0kHz | 0-52 | | |
| 7 | LPF Cutoff | 1.0k～Thru | 34-60 | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W～D=W～D<W63 | 1-127 | | ● |
| 11 | Liveness | 0～10 | 0-10 | | |
| 12 | Density | 0～3 | 0-3 | | |
| 13 | High Damp | 0.1～1.0 | 1-10 | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

- ●印 ：AC1（アサイナブルコントローラー1）でコントロール可能なパラメーターです。
- No. * ：この番号は＜付表 1-3＞→（29ページ）のPARAMETERナンバーに対応します。
- →P52** ：『エフェクトデータアサインテーブル』をご覧ください。

## KARAOKE1,2,3

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Delay Time | 0  127 | 0-127 | table#7 | |
| 2 | Feedback Level | -63  +63 | 1-127 | | |
| 3 | HPF Cutoff | Thru · 8 0kHz | 0-52 | | |
| 4 | LPF Cutoff | 1.0k  Thru | 34-60 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## ROTARY SPEAKER

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | ● |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16 0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## CHORUS1,2,3,4, CELESTE1,2,3,4

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO PM Depth | 0 ~ 127 | 0-127 | | |
| 3 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 4 | Delay Offset | 0 ~ 127 | 0-127 | table#2 | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | Input Mode | mono/stereo | 0-1 | | |
| 16 | | | | | |

## TREMOLO

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | ● |
| 2 | AM Depth | 0 ~ 127 | 0-127 | | |
| 3 | PM Depth | 0 ~ 127 | 0-127 | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | LFO Phase Difference | -180 ~ +180deg | 4-124 | resolution=3deg | |
| 15 | Input Mode | mono/stereo | 0-1 | | |
| 16 | | | | | |

## FLANGER1,2,3

| No * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 4 | Delay Offset | 0 ~ 63 | 0-63 | table#2 | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | LFO Phase Difference | -180 ~ +180deg | 4-124 | resolution=3deg | |
| 15 | | | | | |
| 16 | | | | | |

## AUTO PAN

| No * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | ● |
| 2 | L/R Depth | 0 ~ 127 | 0-127 | | |
| 3 | F/R Depth | 0 ~ 127 | 0-127 | | |
| 4 | PAN Direction | L<->R,L->R,L<-R,Lturn,Rturn,L/R | 0-5 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## SYMPHONIC

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | Delay Offset | 0 ~ 127 | 0-127 | table#2 | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## PHASER1,2

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | Phase Shift Offset | 0 ~ 127 | 0-127 | | |
| 4 | Feedback Level | -63 ~ +63 | 1-127 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16 0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | Stage | 6 ~ 10(phaser1) / 3 ~ 5(phaser2) | 3-10 | | |
| 12 | Diffusion | Mono/Stereo | 0-1 | | |
| 13 | LFO Phase Difference | -180 ~ +180deg | 4-124 | Phaser2のみ | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

・ ●印 ：AC1（アサイナブルコントローラー1）でコントロール可能なパラメーターです。
・ No. * ：この番号は＜付表 1-3＞→（29ページ）のPARAMETERナンバーに対応します。
・ → P52** ：『エフェクトデータアサインテーブル』をご覧ください。

## DISTORTION,OVERDRIVE

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Drive | 0 ~ 127 | 0-127 | | ● |
| 2 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 3 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 4 | LPF Cutoff | 1.0k ~ Thru | 34-60 | table#3 | |
| 5 | Output Level | 0 ~ 127 | 0-127 | | |
| 6 | | | | | |
| 7 | EQ Mid Frequency | 500Hz ~ 10.0kHz | 28-54 | table#3 | |
| 8 | EQ Mid Gain | -12 ~ +12dB | 52-76 | | |
| 9 | EQ Mid Width | 1.0 ~ 12.0 | 10-120 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | |
| 11 | Edge(Clip Curve) | 0 ~ 127 | 0-127 | mild ~ sharp | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## AUTO WAH

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | LFO Frequency | 0.00 ~ 39.7Hz | 0-127 | table#1 | |
| 2 | LFO Depth | 0 ~ 127 | 0-127 | | |
| 3 | Cutoff Frequency Offset | 0 ~ 127 | 0-127 | | ● |
| 4 | Resonance | 1.0 ~ 12.0 | 10-120 | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## GUITAR AMP SIMULATOR

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Drive | 0 ~ 127 | 0-127 | | ● |
| 2 | AMP Type | Off,Stack,Combo,Tube | 0-3 | | |
| 3 | LPF Cutoff | 1.0k ~ Thru | 34-60 | table#3 | |
| 4 | Output Level | 0 ~ 127 | 0-127 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | |
| 11 | Edge(Clip Curve) | 0 ~ 127 | 0-127 | mild ~ sharp | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## PITCH CHANGE

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | Pitch | -24 ~ +24 | 40-88 | | |
| 2 | Initial Delay | 0 ~ 127 | 0-127 | | |
| 3 | Fine | -50 ~ +50 | 14-114 | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 8 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 9 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 10 | Dry/Wet | D63>W ~ D=W ~ D<W63 | 1-127 | | ● |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## 3-BAND EQ

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 2 | EQ Mid Frequency | 500Hz ~ 10.0kHz | 28-54 | table#3 | |
| 3 | EQ Mid Gain | -12 ~ +12dB | 52-76 | | |
| 4 | EQ Mid Width | 1.0 ~ 12.0 | 10-120 | | |
| 5 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 6 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 7 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

## 2-BAND EQ

| No. * | Parameter | Range | Value | → P52** | Control |
|---|---|---|---|---|---|
| 1 | EQ Low Frequency | 50Hz ~ 2.0kHz | 8-40 | table#3 | |
| 2 | EQ Low Gain | -12 ~ +12dB | 52-76 | | |
| 3 | EQ High Frequency | 500Hz ~ 16.0kHz | 28-58 | table#3 | |
| 4 | EQ High Gain | -12 ~ +12dB | 52-76 | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |

- ● 印 ：AC1（アサイナブルコントローラー1）でコントロール可能なパラメーターです。
- No. * ：この番号は＜付表 1-3＞→ (29ページ) のPARAMETERナンバーに対応します。
- →P52** ：『エフェクトデータアサインテーブル』をご覧ください。

## ● エフェクトデータアサインテーブル

### Table#1 — LFO Frequency (Hz)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.00 | 43 | 1.81 | 86 | 5.38 |
| 1 | 0.04 | 44 | 1.85 | 87 | 5.55 |
| 2 | 0.08 | 45 | 1.89 | 88 | 5.72 |
| 3 | 0.13 | 46 | 1.94 | 89 | 6.06 |
| 4 | 0.17 | 47 | 1.98 | 90 | 6.39 |
| 5 | 0.21 | 48 | 2.02 | 91 | 6.73 |
| 6 | 0.25 | 49 | 2.06 | 92 | 7.07 |
| 7 | 0.29 | 50 | 2.10 | 93 | 7.40 |
| 8 | 0.34 | 51 | 2.15 | 94 | 7.74 |
| 9 | 0.38 | 52 | 2.19 | 95 | 8.08 |
| 10 | 0.42 | 53 | 2.23 | 96 | 8.41 |
| 11 | 0.46 | 54 | 2.27 | 97 | 8.75 |
| 12 | 0.51 | 55 | 2.31 | 98 | 9.08 |
| 13 | 0.55 | 56 | 2.36 | 99 | 9.42 |
| 14 | 0.59 | 57 | 2.40 | 100 | 9.76 |
| 15 | 0.63 | 58 | 2.44 | 101 | 10.10 |
| 16 | 0.67 | 59 | 2.48 | 102 | 10.80 |
| 17 | 0.72 | 60 | 2.52 | 103 | 11.40 |
| 18 | 0.76 | 61 | 2.57 | 104 | 12.10 |
| 19 | 0.80 | 62 | 2.61 | 105 | 12.80 |
| 20 | 0.84 | 63 | 2.65 | 106 | 13.50 |
| 21 | 0.88 | 64 | 2.69 | 107 | 14.10 |
| 22 | 0.93 | 65 | 2.78 | 108 | 14.80 |
| 23 | 0.97 | 66 | 2.86 | 109 | 15.50 |
| 24 | 1.01 | 67 | 2.94 | 110 | 16.20 |
| 25 | 1.05 | 68 | 3.03 | 111 | 16.80 |
| 26 | 1.09 | 69 | 3.11 | 112 | 17.50 |
| 27 | 1.14 | 70 | 3.20 | 113 | 18.20 |
| 28 | 1.18 | 71 | 3.28 | 114 | 19.50 |
| 29 | 1.22 | 72 | 3.37 | 115 | 20.90 |
| 30 | 1.26 | 73 | 3.45 | 116 | 22.20 |
| 31 | 1.30 | 74 | 3.53 | 117 | 23.60 |
| 32 | 1.35 | 75 | 3.62 | 118 | 24.90 |
| 33 | 1.39 | 76 | 3.70 | 119 | 26.20 |
| 34 | 1.43 | 77 | 3.87 | 120 | 27.60 |
| 35 | 1.47 | 78 | 4.04 | 121 | 28.90 |
| 36 | 1.51 | 79 | 4.21 | 122 | 30.30 |
| 37 | 1.56 | 80 | 4.37 | 123 | 31.60 |
| 38 | 1.60 | 81 | 4.54 | 124 | 33.00 |
| 39 | 1.64 | 82 | 4.71 | 125 | 34.30 |
| 40 | 1.68 | 83 | 4.88 | 126 | 37.00 |
| 41 | 1.72 | 84 | 5.05 | 127 | 39.70 |
| 42 | 1.77 | 85 | 5.22 | | |

### Table#2 — Modulation Delay Offset (ミリ秒)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.0 | 43 | 4.3 | 86 | 8.6 |
| 1 | 0.1 | 44 | 4.4 | 87 | 8.7 |
| 2 | 0.2 | 45 | 4.5 | 88 | 8.8 |
| 3 | 0.3 | 46 | 4.6 | 89 | 8.9 |
| 4 | 0.4 | 47 | 4.7 | 90 | 9.0 |
| 5 | 0.5 | 48 | 4.8 | 91 | 9.1 |
| 6 | 0.6 | 49 | 4.9 | 92 | 9.2 |
| 7 | 0.7 | 50 | 5.0 | 93 | 9.3 |
| 8 | 0.8 | 51 | 5.1 | 94 | 9.4 |
| 9 | 0.9 | 52 | 5.2 | 95 | 9.5 |
| 10 | 1.0 | 53 | 5.3 | 96 | 9.6 |
| 11 | 1.1 | 54 | 5.4 | 97 | 9.7 |
| 12 | 1.2 | 55 | 5.5 | 98 | 9.8 |
| 13 | 1.3 | 56 | 5.6 | 99 | 9.9 |
| 14 | 1.4 | 57 | 5.7 | 100 | 10.0 |
| 15 | 1.5 | 58 | 5.8 | 101 | 11.1 |
| 16 | 1.6 | 59 | 5.9 | 102 | 12.2 |
| 17 | 1.7 | 60 | 6.0 | 103 | 13.3 |
| 18 | 1.8 | 61 | 6.1 | 104 | 14.4 |
| 19 | 1.9 | 62 | 6.2 | 105 | 15.5 |
| 20 | 2.0 | 63 | 6.3 | 106 | 17.1 |
| 21 | 2.1 | 64 | 6.4 | 107 | 18.6 |
| 22 | 2.2 | 65 | 6.5 | 108 | 20.2 |
| 23 | 2.3 | 66 | 6.6 | 109 | 21.8 |
| 24 | 2.4 | 67 | 6.7 | 110 | 23.3 |
| 25 | 2.5 | 68 | 6.8 | 111 | 24.9 |
| 26 | 2.6 | 69 | 6.9 | 112 | 26.5 |
| 27 | 2.7 | 70 | 7.0 | 113 | 28.0 |
| 28 | 2.8 | 71 | 7.1 | 114 | 29.6 |
| 29 | 2.9 | 72 | 7.2 | 115 | 31.2 |
| 30 | 3.0 | 73 | 7.3 | 116 | 32.8 |
| 31 | 3.1 | 74 | 7.4 | 117 | 34.3 |
| 32 | 3.2 | 75 | 7.5 | 118 | 35.9 |
| 33 | 3.3 | 76 | 7.6 | 119 | 37.5 |
| 34 | 3.4 | 77 | 7.7 | 120 | 39.0 |
| 35 | 3.5 | 78 | 7.8 | 121 | 40.6 |
| 36 | 3.6 | 79 | 7.9 | 122 | 42.2 |
| 37 | 3.7 | 80 | 8.0 | 123 | 43.7 |
| 38 | 3.8 | 81 | 8.1 | 124 | 45.3 |
| 39 | 3.9 | 82 | 8.2 | 125 | 46.9 |
| 40 | 4.0 | 83 | 8.3 | 126 | 48.4 |
| 41 | 4.1 | 84 | 8.4 | 127 | 50.0 |
| 42 | 4.2 | 85 | 8.5 | | |

### Table#3 — EQ Frequency (Hz)

| Data | Value | Data | Value |
|---|---|---|---|
| 0 | THRU(20) | 43 | 2.8k |
| 1 | 22 | 44 | 3.2k |
| 2 | 25 | 45 | 3.6k |
| 3 | 28 | 46 | 4.0k |
| 4 | 32 | 47 | 4.5k |
| 5 | 36 | 48 | 5.0k |
| 6 | 40 | 49 | 5.6k |
| 7 | 45 | 50 | 6.3k |
| 8 | 50 | 51 | 7.0k |
| 9 | 56 | 52 | 8.0k |
| 10 | 63 | 53 | 9.0k |
| 11 | 70 | 54 | 10.0k |
| 12 | 80 | 55 | 11.0k |
| 13 | 90 | 56 | 12.0k |
| 14 | 100 | 57 | 14.0k |
| 15 | 110 | 58 | 16.0k |
| 16 | 125 | 59 | 18.0k |
| 17 | 140 | 60 | THRU(20.0k) |
| 18 | 160 | | |
| 19 | 180 | | |
| 20 | 200 | | |
| 21 | 225 | | |
| 22 | 250 | | |
| 23 | 280 | | |
| 24 | 315 | | |
| 25 | 355 | | |
| 26 | 400 | | |
| 27 | 450 | | |
| 28 | 500 | | |
| 29 | 560 | | |
| 30 | 630 | | |
| 31 | 700 | | |
| 32 | 800 | | |
| 33 | 900 | | |
| 34 | 1.0k | | |
| 35 | 1.1k | | |
| 36 | 1.2k | | |
| 37 | 1.4k | | |
| 38 | 1.6k | | |
| 39 | 1.8k | | |
| 40 | 2.0k | | |
| 41 | 2.2k | | |
| 42 | 2.5k | | |

### Table#4 — Reverb Time (秒)

| Data | Value | Data | Value |
|---|---|---|---|
| 0 | 0.3 | 43 | 4.6 |
| 1 | 0.4 | 44 | 4.7 |
| 2 | 0.5 | 45 | 4.8 |
| 3 | 0.6 | 46 | 4.9 |
| 4 | 0.7 | 47 | 5.0 |
| 5 | 0.8 | 48 | 5.5 |
| 6 | 0.9 | 49 | 6.0 |
| 7 | 1.0 | 50 | 6.5 |
| 8 | 1.1 | 51 | 7.0 |
| 9 | 1.2 | 52 | 7.5 |
| 10 | 1.3 | 53 | 8.0 |
| 11 | 1.4 | 54 | 8.5 |
| 12 | 1.5 | 55 | 9.0 |
| 13 | 1.6 | 56 | 9.5 |
| 14 | 1.7 | 57 | 10.0 |
| 15 | 1.8 | 58 | 11.0 |
| 16 | 1.9 | 59 | 12.0 |
| 17 | 2.0 | 60 | 13.0 |
| 18 | 2.1 | 61 | 14.0 |
| 19 | 2.2 | 62 | 15.0 |
| 20 | 2.3 | 63 | 16.0 |
| 21 | 2.4 | 64 | 17.0 |
| 22 | 2.5 | 65 | 18.0 |
| 23 | 2.6 | 66 | 19.0 |
| 24 | 2.7 | 67 | 20.0 |
| 25 | 2.8 | 68 | 25.0 |
| 26 | 2.9 | 69 | 30.0 |
| 27 | 3.0 | | |
| 28 | 3.1 | | |
| 29 | 3.2 | | |
| 30 | 3.3 | | |
| 31 | 3.4 | | |
| 32 | 3.5 | | |
| 33 | 3.6 | | |
| 34 | 3.7 | | |
| 35 | 3.8 | | |
| 36 | 3.9 | | |
| 37 | 4.0 | | |
| 38 | 4.1 | | |
| 39 | 4.2 | | |
| 40 | 4.3 | | |
| 41 | 4.4 | | |
| 42 | 4.5 | | |

### Table#5 — Delay Time (ミリ秒)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.1 | 43 | 67.8 | 86 | 135.5 |
| 1 | 1.7 | 44 | 69.4 | 87 | 137.0 |
| 2 | 3.2 | 45 | 70.9 | 88 | 138.6 |
| 3 | 4.8 | 46 | 72.5 | 89 | 140.2 |
| 4 | 6.4 | 47 | 74.1 | 90 | 141.8 |
| 5 | 8.0 | 48 | 75.7 | 91 | 143.3 |
| 6 | 9.5 | 49 | 77.2 | 92 | 144.9 |
| 7 | 11.1 | 50 | 78.8 | 93 | 146.5 |
| 8 | 12.7 | 51 | 80.4 | 94 | 148.1 |
| 9 | 14.3 | 52 | 81.9 | 95 | 149.6 |
| 10 | 15.8 | 53 | 83.5 | 96 | 151.2 |
| 11 | 17.4 | 54 | 85.1 | 97 | 152.8 |
| 12 | 19.0 | 55 | 86.7 | 98 | 154.4 |
| 13 | 20.6 | 56 | 88.2 | 99 | 155.9 |
| 14 | 22.1 | 57 | 89.8 | 100 | 157.5 |
| 15 | 23.7 | 58 | 91.4 | 101 | 159.1 |
| 16 | 25.3 | 59 | 93.0 | 102 | 160.6 |
| 17 | 26.9 | 60 | 94.5 | 103 | 162.2 |
| 18 | 28.4 | 61 | 96.1 | 104 | 163.8 |
| 19 | 30.0 | 62 | 97.7 | 105 | 165.4 |
| 20 | 31.6 | 63 | 99.3 | 106 | 166.9 |
| 21 | 33.2 | 64 | 100.8 | 107 | 168.5 |
| 22 | 34.7 | 65 | 102.4 | 108 | 170.1 |
| 23 | 36.3 | 66 | 104.0 | 109 | 171.7 |
| 24 | 37.9 | 67 | 105.6 | 110 | 173.2 |
| 25 | 39.5 | 68 | 107.1 | 111 | 174.8 |
| 26 | 41.0 | 69 | 108.7 | 112 | 176.4 |
| 27 | 42.6 | 70 | 110.3 | 113 | 178.0 |
| 28 | 44.2 | 71 | 111.9 | 114 | 179.5 |
| 29 | 45.7 | 72 | 113.4 | 115 | 181.1 |
| 30 | 47.3 | 73 | 115.0 | 116 | 182.7 |
| 31 | 48.9 | 74 | 116.6 | 117 | 184.3 |
| 32 | 50.5 | 75 | 118.2 | 118 | 185.8 |
| 33 | 52.0 | 76 | 119.7 | 119 | 187.4 |
| 34 | 53.6 | 77 | 121.3 | 120 | 189.0 |
| 35 | 55.2 | 78 | 122.9 | 121 | 190.6 |
| 36 | 56.8 | 79 | 124.4 | 122 | 192.1 |
| 37 | 58.3 | 80 | 126.0 | 123 | 193.7 |
| 38 | 59.9 | 81 | 127.6 | 124 | 195.3 |
| 39 | 61.5 | 82 | 129.2 | 125 | 196.9 |
| 40 | 63.1 | 83 | 130.7 | 126 | 198.4 |
| 41 | 64.6 | 84 | 132.3 | 127 | 200.0 |
| 42 | 66.2 | 85 | 133.9 | | |

### Table#6 — Room Size (メーター)

| Data | Value | Data | Value |
|---|---|---|---|
| 0 | 0.1 | 43 | 6.8 |
| 1 | 0.3 | 44 | 7.0 |
| 2 | 0.4 | | |
| 3 | 0.6 | | |
| 4 | 0.7 | | |
| 5 | 0.9 | | |
| 6 | 1.0 | | |
| 7 | 1.2 | | |
| 8 | 1.4 | | |
| 9 | 1.5 | | |
| 10 | 1.7 | | |
| 11 | 1.8 | | |
| 12 | 2.0 | | |
| 13 | 2.1 | | |
| 14 | 2.3 | | |
| 15 | 2.5 | | |
| 16 | 2.6 | | |
| 17 | 2.8 | | |
| 18 | 2.9 | | |
| 19 | 3.1 | | |
| 20 | 3.2 | | |
| 21 | 3.4 | | |
| 22 | 3.5 | | |
| 23 | 3.7 | | |
| 24 | 3.9 | | |
| 25 | 4.0 | | |
| 26 | 4.2 | | |
| 27 | 4.3 | | |
| 28 | 4.5 | | |
| 29 | 4.6 | | |
| 30 | 4.8 | | |
| 31 | 5.0 | | |
| 32 | 5.1 | | |
| 33 | 5.3 | | |
| 34 | 5.4 | | |
| 35 | 5.6 | | |
| 36 | 5.7 | | |
| 37 | 5.9 | | |
| 38 | 6.1 | | |
| 39 | 6.2 | | |
| 40 | 6.4 | | |
| 41 | 6.5 | | |
| 42 | 6.7 | | |

### Table#7 — Delay Time (ミリ秒)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.1 | 43 | 135.5 | 86 | 270.9 |
| 1 | 3.2 | 44 | 138.6 | 87 | 274.0 |
| 2 | 6.4 | 45 | 141.8 | 88 | 277.2 |
| 3 | 9.5 | 46 | 144.9 | 89 | 280.3 |
| 4 | 12.7 | 47 | 148.1 | 90 | 283.5 |
| 5 | 15.8 | 48 | 151.2 | 91 | 286.6 |
| 6 | 19.0 | 49 | 154.4 | 92 | 289.8 |
| 7 | 22.1 | 50 | 157.5 | 93 | 292.9 |
| 8 | 25.3 | 51 | 160.7 | 94 | 296.1 |
| 9 | 28.4 | 52 | 163.8 | 95 | 299.2 |
| 10 | 31.6 | 53 | 167.0 | 96 | 302.4 |
| 11 | 34.7 | 54 | 170.1 | 97 | 305.5 |
| 12 | 37.9 | 55 | 173.3 | 98 | 308.7 |
| 13 | 41.0 | 56 | 176.4 | 99 | 311.8 |
| 14 | 44.2 | 57 | 179.6 | 100 | 315.0 |
| 15 | 47.3 | 58 | 182.7 | 101 | 318.1 |
| 16 | 50.5 | 59 | 185.9 | 102 | 321.3 |
| 17 | 53.6 | 60 | 189.0 | 103 | 324.4 |
| 18 | 56.8 | 61 | 192.2 | 104 | 327.6 |
| 19 | 59.9 | 62 | 195.3 | 105 | 330.7 |
| 20 | 63.1 | 63 | 198.5 | 106 | 333.9 |
| 21 | 66.2 | 64 | 201.6 | 107 | 337.0 |
| 22 | 69.4 | 65 | 204.8 | 108 | 340.2 |
| 23 | 72.5 | 66 | 207.9 | 109 | 343.3 |
| 24 | 75.7 | 67 | 211.1 | 110 | 346.5 |
| 25 | 78.8 | 68 | 214.2 | 111 | 349.6 |
| 26 | 82.0 | 69 | 217.4 | 112 | 352.8 |
| 27 | 85.1 | 70 | 220.5 | 113 | 355.9 |
| 28 | 88.3 | 71 | 223.7 | 114 | 359.1 |
| 29 | 91.4 | 72 | 226.8 | 115 | 362.2 |
| 30 | 94.6 | 73 | 230.0 | 116 | 365.4 |
| 31 | 97.7 | 74 | 233.1 | 117 | 368.5 |
| 32 | 100.9 | 75 | 236.3 | 118 | 371.7 |
| 33 | 104.0 | 76 | 239.4 | 119 | 374.8 |
| 34 | 107.2 | 77 | 242.6 | 120 | 378.0 |
| 35 | 110.3 | 78 | 245.7 | 121 | 381.1 |
| 36 | 113.5 | 79 | 248.9 | 122 | 384.3 |
| 37 | 116.6 | 80 | 252.0 | 123 | 387.4 |
| 38 | 119.8 | 81 | 255.2 | 124 | 390.6 |
| 39 | 122.9 | 82 | 258.3 | 125 | 393.7 |
| 40 | 126.1 | 83 | 261.5 | 126 | 396.9 |
| 41 | 129.2 | 84 | 264.6 | 127 | 400.0 |
| 42 | 132.4 | 85 | 267.7 | | |

### Table#8 — Reverb Width; Depth; Height (メーター)

| Data | Value | Data | Value | Data | Value |
|---|---|---|---|---|---|
| 0 | 0.5 | 43 | 11.8 | 86 | 24.2 |
| 1 | 0.8 | 44 | 12.1 | 87 | 24.5 |
| 2 | 1.0 | 45 | 12.3 | 88 | 24.9 |
| 3 | 1.3 | 46 | 12.6 | 89 | 25.2 |
| 4 | 1.5 | 47 | 12.9 | 90 | 25.5 |
| 5 | 1.8 | 48 | 13.1 | 91 | 25.8 |
| 6 | 2.0 | 49 | 13.4 | 92 | 26.1 |
| 7 | 2.3 | 50 | 13.7 | 93 | 26.5 |
| 8 | 2.6 | 51 | 14.0 | 94 | 26.8 |
| 9 | 2.8 | 52 | 14.2 | 95 | 27.1 |
| 10 | 3.1 | 53 | 14.5 | 96 | 27.5 |
| 11 | 3.3 | 54 | 14.8 | 97 | 27.8 |
| 12 | 3.6 | 55 | 15.1 | 98 | 28.1 |
| 13 | 3.9 | 56 | 15.4 | 99 | 28.5 |
| 14 | 4.1 | 57 | 15.6 | 100 | 28.8 |
| 15 | 4.4 | 58 | 15.9 | 101 | 29.2 |
| 16 | 4.6 | 59 | 16.2 | 102 | 29.5 |
| 17 | 4.9 | 60 | 16.5 | 103 | 29.9 |
| 18 | 5.2 | 61 | 16.8 | 104 | 30.2 |
| 19 | 5.4 | 62 | 17.1 | | |
| 20 | 5.7 | 63 | 17.3 | | |
| 21 | 5.9 | 64 | 17.6 | | |
| 22 | 6.2 | 65 | 17.9 | | |
| 23 | 6.5 | 66 | 18.2 | | |
| 24 | 6.7 | 67 | 18.5 | | |
| 25 | 7.0 | 68 | 18.8 | | |
| 26 | 7.2 | 69 | 19.1 | | |
| 27 | 7.5 | 70 | 19.4 | | |
| 28 | 7.8 | 71 | 19.7 | | |
| 29 | 8.0 | 72 | 20.0 | | |
| 30 | 8.3 | 73 | 20.2 | | |
| 31 | 8.6 | 74 | 20.5 | | |
| 32 | 8.8 | 75 | 20.8 | | |
| 33 | 9.1 | 76 | 21.1 | | |
| 34 | 9.4 | 77 | 21.4 | | |
| 35 | 9.6 | 78 | 21.7 | | |
| 36 | 9.9 | 79 | 22.0 | | |
| 37 | 10.2 | 80 | 22.4 | | |
| 38 | 10.4 | 81 | 22.7 | | |
| 39 | 10.7 | 82 | 23.0 | | |
| 40 | 11.0 | 83 | 23.3 | | |
| 41 | 11.2 | 84 | 23.6 | | |
| 42 | 11.5 | 85 | 23.9 | | |

YAMAHA   [ Tone Generator ]                    Date:05-APR-1996
        Model   MU10 MIDI Implementation Chart      Version : 1.0

| Function ... | Transmitted | Recognized | Remarks |
|---|---|---|---|
| :Basic      Default | x | 1 - 16 | |
| :Channel   Changed | x | 1 - 16 | |
| :            Default | x | 3 | |
| :Mode      Messages | x | 3,4(m = 1)   *2 | |
| :            altered | ************** | x | |
| :Note | x | 0 - 127 | |
| :Number : True voice | ************** | 0 - 127 | |
| :Velocity Note ON | x | o   9nH,v=1-127 | |
| :           Note OFF | x | x | |
| :After     Key's | x | o            *1 | |
| :Touch    Ch's | x | o            *1 | |
| :Pitch Bender | x | o 0-24 semi *1 | |
| :              0,32 | x | o            *1 | :Bank Select |
| :        1,5,7,10,11 | x | o            *1 | : |
| :              6,38 | x | o            *1 | :Data Entry |
| :              64-67 | x | o            *1 | : |
| : Control    71-74 | x | o            *1 | :Sound Controller |
| :              84 | x | o            *1 | :Portamento Cntrl |
| : Change  91,93,94 | x | o            *1 | :Effect Depth |
| :              96-97 | x | o            *1 | :RPN Inc,Dec |
| :              98-99 | x | o            *1 | :NRPN LSB,MSB |
| :            100-101 | x | o            *1 | :RPN LSB,MSB |
| :              120 | x | o | :All Sound Off |
| :              121 | x | o | :Reset All Cntrls |
| : | : | : | : |
| :Prog | x | o   0 - 127 | |
| :Change : True # | *********** | | |
| :System Exclusive | x | o | |
| :          : Song Pos. | x | x | |
| :common : Song Sel. | x | x | |
| :          : Tune | x | x | |
| :System     :Clock | x | x | |
| :Real Time :Commands | x | x | |
| :Aux   :Local ON/OFF | x | x | |
| :        :All Notes OFF | x | o(123-127) | |
| :Mes-  :Active Sense | x | o | |
| :sages:Reset | x | x | |
| :Notes: *1  ; receive if switch is on. | | | |
| :       *2  ; m is always treated as "1" regardless of its value. | | | |

Mode 1 : OMNI ON,  POLY   Mode 2 : OMNI ON,  MONO        o : Yes
Mode 3 : OMNI OFF, POLY   Mode 4 : OMNI OFF, MONO        x : No

DM

PN

28C - 8811312

28C - 8811311

**Notes)**
Circuit Board: PN (VU675800) XR812B0
1. **IC**
   IC 01,02: UPC4570G2 (XF291A00) OP AMP
   IC 03: NJM4556AMT1 (XG138A00) OP AMP
2. **Transistor**
   TR 01,02: 2SC2462LCTR C (VQ395500)
   TR 03,04: 2SC3326 A,B TE85 (VD303700)
3. **Diode Array**
   DA 01,02: DAN217   0.3A   X (VN956800)
4. **LED**
   LED1: SLP-981B-51 RE (VA835100)
5. **Monolithic Ceramic Cap.**
   C 02,06-08, 12,13,17, 23: SL 100P 50V J (UB052100)
   C 05,11: SL  22P 50V J (UB051220)
   C 15,21: B  3300P 50V K (UB013330)
   C 16,22,26, 28-30: F 0.100 25V Z (UB245100)
   C 19,25: B  1000P 50V K (UB013100)
6. **Electrolytic Cap.**
   C 01,18,24: 100.00  16.0V (UI538100)
   C 03,09,27: 10.00  16.0V (UI537100)
   C 04,10: 4.70  50.0V (UI566470)
7. **Electrolytic Cap. BP**
   C 14,20: 10.00  16.0V (VB408900)
8. **Chip Inductance**
   L 01-05: BLM21B751S 2125 (VS740100)
   L 06,07: BLM21B050S (VL139600)
9. **Carbon Resistor (chip)**
   R 01: 330.0 0.1 J (RD255330)
   R 02,05,08, 11,28,29, 38,39: 100.0K 0.1 J (RD258100)
   R 03,04,09, 10,30,31: 1.0K 0.1 J (RD256100)
   R 06,12: 12.0K 0.1 J (RD257120)
   R 07,13,33, 35: 33.0K 0.1 J (RD257330)
   R 14,20: 22.0K 0.1 J (RD257220)
   R 15,21,26: 9.1K 0.1 J (RD256910)
   R 16,22: 8.2K 0.1 J (RD256820)
   R 17,23: 18.0K 0.1 J (RD257180)
   R 18,24,27, 32: 10.0K 0.1 J (RD257100)
   R 19,25: 47.0 1/4 J (RD154470)
   R 34,36: 4.7K 0.1 J (RD256470)
   R 37: 47.0K 0.1 J (RD257470)
10. **Phone Jack**
    JK 01: HLJ4306 (VI662400) A/D INPUT 1
    JK 02: YKB21-5012 (VB312600) A/D INPUT 2
    JK 03: YKB21-5130 (VI435500) LINE OUT /PHONES
11. **Connector Assembly**
    CN 01: 15P (VT763400) to M-CN01
12. **Slide Variable Resistor**
    VR 01,02: A50K RS15M111J00 (VU540800) A/D INPUT VOLUME
    VR 03: C 10.0K RS15H12A (VP276500) VOLUME

**Notes)**
Circuit Board: DM (VU675700) XR811B0
1. **IC**
   IC 01: SI-8401L (XR925A00) REGULATOR +5V
   IC 02: SC7SU04FEL (XI348A00) INVERTOR
   IC 03: MC34051MEL (XP881A00) LINE TRANSCEIVER
   IC 05: TC7W14F (XQ336A00) INVERTOR
   IC 06: HD6413002FP16 (XQ375A00) CPU
   IC 07: MSM534002C (XS289A00) SYSTEM ROM 4M
   IC 08: UPD43256BGU-70L (XR115A00) SRAM 256K
   IC 09: LH64256BK-70 (XR645A00) DRAM 256K
   IC 10: TC170C120SF-003 (XQ036A00) SWP00 WAVE ROM
   IC 11: MX23C3210MC-12 (XR709A00) WAVE ROM
   IC 12: D65611GB-030-3B (XR976A00) GATE ARRAY
   IC 13: PST572CMT-R (XL122A00) RESET
   IC 14: AK4510-VS (XR391A00) ADC/DAC
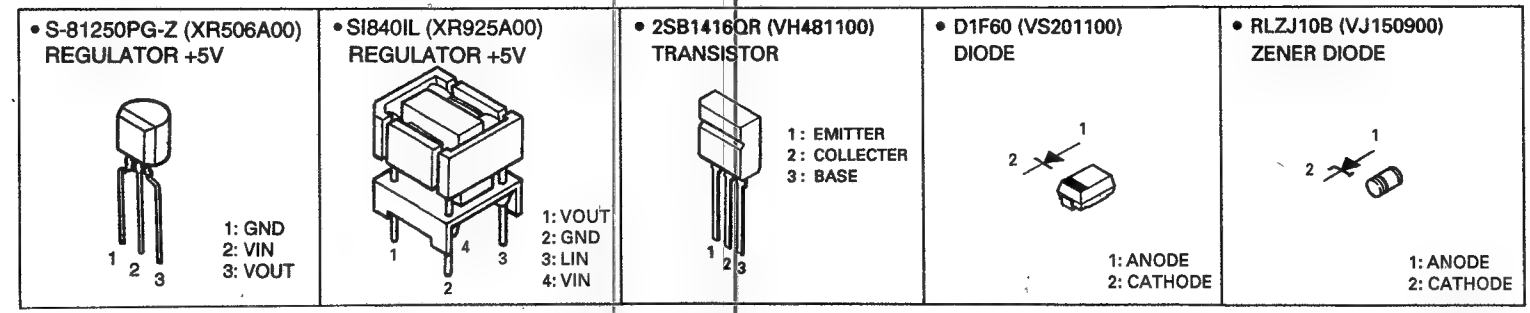   IC 15: S-81250PG-Z (XR506A00) REGULATOR +5V

2. **Transistor**
   TR 01: 2SB1416(TA) Q,R (VH481100)
   TR 02: 2SC3326 A,B TE85 (VD303700)
   TR 03: 2SA1162 O,Y (VJ927200)
3. **Diode**
   D 01-03: D1F60 (VS201100)
   D 04-06: RLS-73 (VB797600)
   D 07: SB007-03CP (VU762200)
4. **Diode Array**
   DA 01,03: DAN217   0.3A   X (VN956800)
   DA 02: DAP202K (VD455100)
5. **Zener Diode**
   ZD 01: RLZJ 10B  10.0V (VJ150900)
6. **Photo Coupler**
   IC 04: PC-900V (VG181900)
7. **Monolithic Ceramic Cap.**
   C 01,03,05,06, 08,14-16,19, 20,22,23,26, 30-32,35,36, 39,40,45,47, 52,54,56,57: F 0.100 25V Z (UB245100)

   C 18,28,29: F 0.010 50V Z (UB044100)
   C 24,25: SL  22P 50V J (UB051220)
   C 37: D  8P 50V J (VJ899300)
   C 38: SL  12P 50V J (UB051120)
   C 42: F 0.470 16V Z (UB445470)
   C 48-51: B  2200P 50V K (UB013220)
8. **Electrolytic Cap.**
   C 02: 330.00  25.0V (VL452700)
   C 04: 470.00  16.0V (VI254700)
   C 07,44,55: 100.0 1/4 J (RD155470)
   C 09: 47.00  16.0V (UI537470)
   C 11: 100.00  16.0V (UI528100)
   C 12: 4.70  50.0V (UI566470)
   C 17,21,27, 34,41,46, 53: 10.00  16.0V (UI537100)
   C 43: 470.00  16.0V (VF680100)
9. **Electrolytic Cap. BP**
   C 13: 47.00  10.0V (VT759200)

10. **Chip Inductance**
    L 01: SH-302 (VR772400)
    L 02,17-20: BLM21B050S (VL139600)
    L 03-16: BLM21B751S 2125 (VS740100)
11. **Carbon Resistor (chip)**
    R 01,06: 47.0K 0.1 J (RD257470)
    R 02,03: 1.8K 0.1 J (RD256180)
    R 04: 470.0 1/4 J (RD155470)
    R 05: 100.0 1/4 J (RD155470)
    R 06: 330.0 0.1 J (RD255330)
    R 07,30,31: 100.0K 0.1 J (RD258100)
    R 09: 100.0K 0.1 J (RD258100)
    R 10,11: 100.00  16.0V (UI528100)
    R 12-14,18-20, 23,24,29,33, 34,36,37,52: 10.0K 0.1 J (RD257100)
    R 15,35,51: 1.0K 0.1 J (RD256100)
    R 16,17,41: 100.0 0.1 J (RD255100)
    R 21,22,25, 27,28: 220.0 0.1 J (RD255220)
    R 26: 270.0 0.1 J (RD255270)
    R 32: 3.3K 0.1 J (RD256330)

    R 42: 680.0 0.1 J (RD255680)
    R 43: 1.0M 0.1 J (RD259100)
    R 46: 4.7K 0.1 J (RD256470)
    R 47: 22.0K 0.1 J (RD257220)
    R 48: 47.0 0.1 J (RD254470)
    R 53: 10.0 0.1 J (RD254100)

12. **Resistor Array**
    RA 01,02: 68X4 (RE044680)
    RA 03,04,10: 100X4 (RE045100)
    RA 05-09,13-17: 220X4 (RE045220)
    RA 11: EXB-V8V103JV (VM506100)
    RA 12,18-23: 470X4 (RE045470)
13. **Slide Switch**
    SW 01: SSSF12302A (VN990400) POWER
    SW 02: SSSF124-S06N-0 (VN210700) HOST SELECT
14. **DC-IN Connector**
    JK 01: 16V DC 3A  HEC23 (VJ207400) DC IN
    JK 02: DIN  8P  MD-S810 (VM761000) TO HOST
    JK 03,04: 5P TCS5076-95-15 (VS739900) MIDI IN, OUT

15. **Connector**
    CN 01: 52147 15P TE (VF667600) to PN-CN01
16. **Connector Assembly**
    B + : RE (VS550300)
    B - : BL (VS550400)
17. **LC Filter**
    EMI01,02,04, EMI06: DSS306-93F223Z1 (VD542700)
    EMI03: STF-104ZB-TBM (VR193800)
18. **Quartz Crystal Unit**
    X 01: AT-49/12.0000MHZ (VE463500)
    X 02: 33.8688M SMD-49 (VT685200)

• S-81250PG-Z (XR506A00) REGULATOR +5V
   1: GND
   2: VIN
   3: VOUT

• SI840IL (XR925A00) REGULATOR +5V
   1: VOUT
   2: GND
   3: LIN
   4: VIN

• 2SB1416QR (VH481100) TRANSISTOR
   1: EMITTER
   2: COLLECTER
   3: BASE

• D1F60 (VS201100) DIODE
   1: ANODE
   2: CATHODE

• RLZJ10B (VJ150900) ZENER DIODE
   1: ANODE
   2: CATHODE

■ MU10 OVERALL CIRCUIT DIAGRAM

# TONE GENERATOR

# MU10

# PARTS LIST

## ■ CONTENTS (目次)

- The numbers in " QTY " show quantities for each unit.
- The parts with "--" in " PART NO. " are not available as spare parts.
- 部品価格ランクは、変更になることがあります。
- QTY 欄に記されている数字は、使用個数です。
- PART NO.が "--" の部品は、サービス用部品として準備されておりません。

# ■ OVERALL ASSEMBLY (総組立)



| | REF NO. | PART NO. | DESCRIPTION | | | 部　　品　　名 | | REMARKS | | QTY | ランク |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | -- | | OVERALL ASSEMBLY | J | | 総　　組　　立 | | MU10 | (VU68060) | | |
| ＊ | 10 | VU614000 | Top Cover | | | トップカバー印刷品 | | | | | |
| ＊ | 20 | VU675800 | Circuit Board | PN | | Ｐ　Ｎ　シ　ー　ト | | | | | |
| | 40 | EP620170 | Bind Head Tapping Screw-P | 2.6X6 | MFZN2Y | ＋バインドＰタイト | | | | 4 | 01 |
| ＊ | 50 | VU614400 | Shield Sheet | | | シ　ー　ル　ド　シ　ー　ト | | | | | |
| ＊ | 60 | VU675700 | Circuit Board | DM | | Ｄ　Ｍ　シ　ー　ト | | | | | |
| | 70 | EP620170 | Bind Head Tapping Screw-P | 2.6X6 | MFZN2Y | ＋バインドＰタイト | | | | 2 | 01 |
| ＊ | 80 | VU614100 | Bottom Cover | | | ボ　ト　ム　カ　バ　ー | | | | | |
| | 90 | VS608600 | Battery Holder | | | バッテリーホルダー | | | | | 04 |
| | 100 | VK358300 | Spring Terminal | A | | 接　　点　　バ　　ネ | | | | | 04 |
| | 110 | EP620120 | Bind Head Tapping Screw-P | 2.6X8 | MFZN2BL | ＋バインドＰタイト | | | | 2 | 01 |
| ＊ | 120 | VU614200 | Battery Cover | | | バッテリーカバー | | | | | |
| ＊ | 130 | EP620120 | Bind Head Tapping Screw-P | 2.6X8 | MFZN2BL | ＋バインドＰタイト | | | | 5 | 01 |
| ＊ | 140 | VU713700 | Name Plate | | | ネームプレート印刷品 | | | | | |
| ＊ | 150 | VU713600 | Insulation Sheet | | | 線材絶縁シート | | | | | |

＊ New Parts（新規部品）

ランク：Japan only

1

# ■ ELECTRICAL PARTS (電気部品)

| REF NO. | PART NO. | DESCRIPTION | | 部　　品　　名 | REMARKS | QTY | ランク |
|---|---|---|---|---|---|---|---|
| | | ELECTRICAL PARTS | | 電　気　部　品 MU10 | | | |
| ‡ | VU675700 | Circuit Board | DM | D M シ ー ト | (XR811B0) | | |
| ‡ | VU675800 | Circuit Board | PN | P N シ ー ト | (XR812B0) | | |
| ‡ | VU675700 | Circuit Board | DM | D M シ ー ト | (XR811B0) | | |
| | UB013220 | Monolithic Ceramic Cap. | B 2200P 50V K | チップ積層セラコン | | | 01 |
| | UB051120 | Monolithic Ceramic Cap. | SL 12P 50V J | チップ積層セラコン | | | 01 |
| | UB051220 | Monolithic Ceramic Cap. | SL 22P 50V J | チップ積層セラコン | | | 01 |
| | VJ899300 | Monolithic Ceramic Cap. | D 8P 50V J | チップ積層セラコン | | | 01 |
| | UB044100 | Monolithic Ceramic Cap. | F 0.010 50V Z | チップ積層セラコン | | | 01 |
| | UB245100 | Monolithic Ceramic Cap. | F 0.100 25V Z | チップ積層セラコン | | | 01 |
| | UB445470 | Monolithic Ceramic Cap. | F 0.470 16V Z | チップ積層セラコン | | | 01 |
| | UI528100 | Electrolytic Cap. | 100.00 10.0V | ケ ミ コ ン | | | 01 |
| | UI537100 | Electrolytic Cap. | 10.00 16.0V | ケ ミ コ ン | | | 01 |
| | UI537470 | Electrolytic Cap. | 47.00 16.0V | ケ ミ コ ン | | | 01 |
| | UI538100 | Electrolytic Cap. | 100.00 16.0V | ケ ミ コ ン | | | 01 |
| | UI566470 | Electrolytic Cap. | 4.70 50.0V | ケ ミ コ ン | | | 01 |
| | VF680100 | Electrolytic Cap. | 470.00 10.0V | ケ ミ コ ン | | | 01 |
| | VI254700 | Electrolytic Cap. | 470.00 16.0V | ケ ミ コ ン | | | 01 |
| | VL452700 | Electrolytic Cap. | 330.00 25.0V | ケ ミ コ ン | | | 01 |
| | VT759200 | Electrolytic Cap. BP | 47.00 10.0V | B P ケ ミ コ ン | | | 01 |
| | VS740100 | Chip Inductance | BLM21B751S 2125 | チップインダクタ | | | 03 |
| | VL139600 | Chip Inductance | BLM21B050S 2125 | チップインダクタ | | | 01 |
| | RD155100 | Carbon Resistor (chip) | 100.0 1/4 J | チ ッ プ 抵 抗 | | | 01 |
| | RD155470 | Carbon Resistor (chip) | 470.0 1/4 J | チ ッ プ 抵 抗 | | | 01 |
| | RD254100 | Carbon Resistor (chip) | 10.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD254470 | Carbon Resistor (chip) | 47.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD254680 | Carbon Resistor (chip) | 68.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD255100 | Carbon Resistor (chip) | 100.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD255150 | Carbon Resistor (chip) | 150.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD255220 | Carbon Resistor (chip) | 220.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD255270 | Carbon Resistor (chip) | 270.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD255330 | Carbon Resistor (chip) | 330.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD255680 | Carbon Resistor (chip) | 680.0 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD256100 | Carbon Resistor (chip) | 1.0K 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD256180 | Carbon Resistor (chip) | 1.8K 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD256330 | Carbon Resistor (chip) | 3.3K 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD256470 | Carbon Resistor (chip) | 4.7K 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD257100 | Carbon Resistor (chip) | 10.0K 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD257220 | Carbon Resistor (chip) | 22.0K 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD257470 | Carbon Resistor (chip) | 47.0K 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD258100 | Carbon Resistor (chip) | 100.0K 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | RD259100 | Carbon Resistor (chip) | 1.0M 0.1 J | チ ッ プ 抵 抗 | | | 01 |
| | VM506100 | Resistor Array | EXB-V8V103JV | 抵 抗 ア レ イ | | | 01 |
| | RE044680 | Resistor Array | 3216 68X4 | 抵 抗 ア レ イ | | | 01 |
| | RE045100 | Resistor Array | 3216 100X4 | 抵 抗 ア レ イ | | | 01 |
| | RE045220 | Resistor Array | 3216 220X4 | 抵 抗 ア レ イ | | | 01 |
| | RE045470 | Resistor Array | 3216 470X4 | 抵 抗 ア レ イ | | | 01 |
| ‡ | XR506A00 | IC | S-81250PG-Z | I C | REGULATOR +5V | | |
| ‡ | XR925A00 | IC | SI-8401L | I C | REGULATOR +5V | | |
| | XL122A00 | IC | PST572CMT-R | I C | RESET | | 02 |
| | X1348A00 | IC | SC7SU04FEL | I C | INVERTER | | 01 |
| | XP881A00 | IC | MC34051MEL | I C | LINE TRANSCEIVER | | 05 |
| | XR336A00 | IC | TC7W14F | I C | INVERTER | | 02 |
| | XQ036A00 | IC | TC170C120SF-003 | I C | SWP00 | | 10 |
| | XQ375A00 | IC | HD6413002FP16 | I C | CPU | | 09 |
| ‡ | XR976A00 | IC | D65611GB-030-3B | I C | GATE ARRAY | | 05 |
| | XR115A00 | IC | UPD43256BGU-70L | I C | SRAM 256K | | 08 |
| | XR645A00 | IC | LH64256BK-70 | I C | DRAM 256K | | 08 |
| | XR709A00 | IC | MX23C3210MC-12 | I C | WAVE ROM | | 13 |
| ‡ | XS289A00 | IC | MSM534002C | I C | SYSTEM ROM 4M | | |
| | XR391A00 | IC | AK4510-VS | I C | ADC/DAC | | 09 |
| | VN210700 | Slide Switch | SSSF124-S06N-0 | ス ラ イ ド S W | HOST SELECT | | 03 |
| | VN990400 | Slide Switch | SSSF12302A | ス ラ イ ド S W | POWER | | 02 |
| | VJ207400 | DC-IN Connector | 16V DC 3A HEC2305 | D C ジャック | DC IN | | 01 |
| | VS739900 | DIN Connector | 5P TCS5076-95-1511 | D I N コネクタ | MIDI IN, OUT | | 03 |
| | VM761000 | DIN Connector | DIN 8P MD-S810 | 複 合 コ ネ ク タ | TO HOST | | 03 |
| | VF667600 | Connector | 52147 15P TE | コ ネ ク タ | to PN-CN01 | | 01 |
| | VD542700 | LC Filter | DSS306-93F223Z1 | L C フィルター | | | 01 |
| | VR193800 | LC Filter | STF-104ZB-TBM | L C フィルターEMI | | | 01 |

‡ New Parts (新規部品)

ランク : Japan only

| REF NO. | PART NO. | DESCRIPTION | | 部　　　品　　　名 | REMARKS | QTY | ランク |
|---|---|---|---|---|---|---|---|
| | VR772400 | LC Filter | SH-302 | ＬＣフィルターＥＭＩ | | | 04 |
| | VE463500 | Quartz Crystal Unit | AT-49/12.0000MHZ | 水　晶　振　動　子 | | | 03 |
| | VT685200 | Quartz Crystal Unit | 33.8688M SMD-49 | 水　晶　振　動　子 | | | 04 |
| | VJ927200 | Transistor | 2SA1162 O,Y | ト　ラ　ン　ジ　ス　タ | | | 01 |
| | VH481100 | Transistor | 2SB1416(TA) Q,R | ト　ラ　ン　ジ　ス　タ | | | 01 |
| | VD303700 | Transistor | 2SC3326 A,B TE85R | ト　ラ　ン　ジ　ス　タ | | | 01 |
| | VB797600 | Diode | RLS-73 | ダ　イ　オ　ー　ド | | | 01 |
| | VS201100 | Diode | D1F60 | ダ　イ　オ　ー　ド | | | 01 |
| | VD455100 | Diode Array | DAP202K | ダイオードアレイ | | | 01 |
| | VN956800 | Diode Array | DAN217 0.3A X2 | ダイオードアレイ | | | 01 |
| ‡ | VU762200 | Diode Stack | SB007-03CP | ダイオードスタック | | | |
| | VJ150900 | Zener Diode | RLZJ 10B 10.0V | ツェナーダイオード | | | 01 |
| | VG181900 | Photo Coupler | PC-900V | フ　ォ　ト　カ　プ　ラ | | | 03 |
| | -- | Connector Assembly | RE | 線材Ａｓｓ'ｙ | (VS55030) | | |
| | VK358400 | Spring Terminal | B | 接　　点　　バ　　ネ | | | 02 |
| | -- | Connector Assembly | BL | 線材Ａｓｓ'ｙ | (VS55040) | | |
| | VK358500 | Spring Terminal | C | 接　　点　　バ　　ネ | | | 03 |
| ‡ | VU675800 | Circuit Board | PN | ＰＮシート | (XR812B0) | | |
| | UB013100 | Monolithic Ceramic Cap. | B 1000P 50V K | チップ積層セラコン | | | 01 |
| | UB013330 | Monolithic Ceramic Cap. | B 3300P 50V K | チップ積層セラコン | | | 01 |
| | UB051220 | Monolithic Ceramic Cap. | SL 22P 50V J | チップ積層セラコン | | | 01 |
| | UB052100 | Monolithic Ceramic Cap. | SL 100P 50V J | チップ積層セラコン | | | 01 |
| | UB245100 | Monolithic Ceramic Cap. | F 0.100 25V Z | チップ積層セラコン | | | 01 |
| | UI537100 | Electrolytic Cap. | 10.00 16.0V | ケ　　ミ　　コ　　ン | | | 01 |
| | UI538100 | Electrolytic Cap. | 100.00 16.0V | ケ　　ミ　　コ　　ン | | | 01 |
| | UI566470 | Electrolytic Cap. | 4.70 50.0V | ケ　　ミ　　コ　　ン | | | 01 |
| | VB408900 | Electrolytic Cap. BP | 10.00 16.0V | ＢＰケミコン | | | |
| | VS740100 | Chip Inductance | BLM21B751S 2125 | チップインダクタ | | | 03 |
| | VL139600 | Chip Inductance | BLM21B050S 2125 | チップインダクタ | | | 01 |
| | RD154470 | Carbon Resistor (chip) | 47.0 1/4 J | チ　ッ　プ　抵　抗 | | | |
| | RD255330 | Carbon Resistor (chip) | 330.0 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD256100 | Carbon Resistor (chip) | 1.0K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD256470 | Carbon Resistor (chip) | 4.7K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD256820 | Carbon Resistor (chip) | 8.2K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD256910 | Carbon Resistor (chip) | 9.1K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD257100 | Carbon Resistor (chip) | 10.0K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD257120 | Carbon Resistor (chip) | 12.0K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD257180 | Carbon Resistor (chip) | 18.0K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD257220 | Carbon Resistor (chip) | 22.0K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD257330 | Carbon Resistor (chip) | 33.0K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD257470 | Carbon Resistor (chip) | 47.0K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | RD258100 | Carbon Resistor (chip) | 100.0K 0.1 J | チ　ッ　プ　抵　抗 | | | 01 |
| | XF291A00 | IC | UPC4570G2 | Ｉ　　　　　Ｃ | OP AMP | | 03 |
| | XQ138A00 | IC | NJM4556AMT1 | Ｉ　　　　　Ｃ | OP AMP | | 03 |
| | VB312600 | Phone Jack | YKB21-5012(BL) | ホ　ー　ンコネクタ | A/D INPUT 2 | | 02 |
| | VI435500 | Phone Jack | YKB21-5130(1P) | ミ　ニ　ジ　ャ　ッ　ク | LINE OUT/PHONES | | 01 |
| | VI662400 | Phone Jack | HLJ4306 | ホ　ー　ンコネクタ | A/D INPUT 1 | | 02 |
| ‡ | VU540800 | Slide Variable Resistor | A50K RS15M111J006B | スライドＶＲ | A/D INPUT VOLUME 1,2 | | |
| | VP276500 | Slide Variable Resistor | C 10.0K RS15H12AD | 二連スライドＶＲ | VOLUME | | 02 |
| | VD303700 | Transistor | 2SC3326 A,B TE85R | ト　ラ　ン　ジ　ス　タ | | | 01 |
| | VQ395500 | Transistor | 2SC2462LCTR C | ト　ラ　ン　ジ　ス　タ | | | 01 |
| | VN956800 | Diode Array | DAN217 0.3A X2 | ダイオードアレイ | | | 01 |
| | VA835100 | LED | SLP-981B-51 RE | Ｌ　　Ｅ　　Ｄ | | | 01 |
| | VS992600 | LED Spacer | BL | ＬＥＤスペーサー | | | 03 |
| | -- | Connector Assembly | 15P | ＬＣＤ束線 | to M-CN01 (VT76340) | | |
| ‡ | VV052500 | Cloth, VR | | ＶＲクロス | | | |
| ‡ | VV052400 | Sield, VR | | ＶＲシールド | | | |